

Annex IV

Report Form to be used for the submission of the Final Report and/or Further pre-financing request

THIS REPORT IS SUBMITTED UNDER THE FRAMEWORK PARTNERSHIP AGREEMENT 2010 -
0011

In the context of:

The mandatory final report for the specific grant agreement with the number:

2010 - 1816 (e.g. "2010-1234")

and/or

The request for the further pre-financing payment for the specific agreement number:

- (e.g. "2011-5678")

General instructions

- You should carefully read Chapter IV of the *Administrative and Financial Handbook* before submitting your report form.
http://eacea.ec.europa.eu/erasmus_mundus/beneficiaries/documents/action1/sga_emjd_annex_v_handbook_2011.pdf
- The report form covers the activities of the entire reporting period. The reporting period is the period elapsed since the start of the activities of the joint programme or the submission of the last report form (i.e. progress report, further pre-financing request or final report). Because of the overlapping activities between consecutive editions (/intakes) of the joint programme, the report must address all ongoing editions as well as the activities implemented for the preparation of the next edition.
- The report must cover both the activities related to the implementation and management of the Joint Doctorate programme by the consortium (including the management of the individual fellowships), and those related to the individual research projects implemented by the EM fellowship holders.
- The report form must be submitted by the beneficiary on behalf of the Erasmus Mundus Joint Doctorate consortium. The declaration at the end of the form confirms that a process of consultation and approval has been carried out by the consortium. It is therefore important that the required information is collected in good time before the deadline for submission of the report.

Beneficiary check-list¹

To be enclosed in the Progress/Final (delete as applicable) report

Project N° : 2010-1816

	Yes	No	N/A
Report signed by the legal representative or by an authorised person*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agency's template for report respected	X	<input type="checkbox"/>	<input type="checkbox"/>
Electronic format of the report compatible with the Agency's system	X	<input type="checkbox"/>	<input type="checkbox"/>
Final costs are presented against the unmodified contractual budget breakdown as required in the reporting instructions	X	<input type="checkbox"/>	<input type="checkbox"/>
In the Financial Report, the amount of interests received on pre-financing is declared or 0 EUR is reported if no interest was received (Final report only ; N/A for progress report)	X	<input type="checkbox"/>	<input type="checkbox"/>
Technical implementation Report (Operational part) enclosed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial Report part enclosed (N/A for a progress report with no request for 2 nd pre-financing)	X	<input type="checkbox"/>	<input type="checkbox"/>
Copy of the report enclosed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobility tool output is enclosed	X	<input type="checkbox"/>	<input type="checkbox"/>
Supporting documents enclosed (if applicable)	X	<input type="checkbox"/>	<input type="checkbox"/>

**If the signatory is not the Legal Representative, a valid document confirming the authorisation to sign on his/her behalf must be added.*

¹Please note that if one (or more) of the above replies are negative, the **report will be rejected**

In order to facilitate and speed up the assessment of your admissible report, please take also into consideration the following points which are mandatory to submit for Progress Report and 2nd Pre-financing (check boxes)²

CONTENT CHECK LIST

		YES
1	The narrative part of the report has been submitted in line with the instructions given in PART A; TECHNICAL PART	<i>X</i>
2	EACEA MOBILITY TOOL (EMT): <i>3.1 All relevant data has been provided and up-dated for Cat. A & B & Windows (candidate's data, mobility tracks, number of payments, amounts received)</i> <i>3.2 The candidate scholarship data has been extracted (by using the progress report hyperlink) and attached to the report.</i> <i>3.4 The non-scholarship data has been extracted (by using the "export to pdf" functionality) and attached to the report.</i> <i>3.5 The extracted lists have been signed and dated by the coordinator.</i>	<i>X</i> <i>X</i> <input type="checkbox"/> <i>X</i>
5	<i>A template of the employment contract(s) used is included in the report (if not submitted in previous report or corrected/changed from original to EACEA)</i>	<i>X</i>

Additionally to submit for 2nd Pre-financing (check boxes):

		YES
1	The financial declaration on the use of the EM Grant is signed by the legal representative of the coordinating institution (<i>if the signatory is not the Legal Representative, a valid document confirming the authorisation to sign on his/her behalf must be added</i>).	<input type="checkbox"/>
2	The total expenditure as indicated in the EMT print-out (EM candidate scholarships) is in full coherence with the figures indicated in the financial declaration of Part E. (NB: the only possible difference between the amount indicated in the EMT print-out compared to the financial declaration can be the flat rate/lump sum amount of max. 50.000 EUR)	<input type="checkbox"/>
3	The lump sum/flat rate has been added to the total expenditure in the financial declaration of Part E	<input type="checkbox"/>

²Please note that if the Agency during the assessment of the above mentioned report detects a problem/ a missing or wrong document related to the mandatory points of the content check list, this will lead to a **request for additional information or even a rejection of the report** which cause unnecessary delays in its treatment.

- The technical (/narrative) part of the report must be submitted in the operational language of communication between the institutions involved in the consortium.
- The Doctoral Candidate's fellowship data extracted from the "EACEA Mobility Tool" (Part B of the report) must contain all the relevant information related to the candidates enrolled (with and without EM fellowship) funded by the EM Programme during the course edition(s) concerned by this report. See EACEA Mobility Tool User Manual for further information. Any empty fields in the output must be explained in the report.

- The EACEA Mobility Tool User Manual can be retrieved here:

<http://iis-cfprod.eacea.cec.eu.int/mobility/docs/EACEA-Mobility-database-guidelines-EM.pdf>

- The original of the report must be sent no later (as per postmark) than by the deadline (30/11/2013) specified in the specific agreement to:

Education, Audiovisual and Culture Executive Agency (EACEA)
Unit P4 - Erasmus Mundus and External Cooperation
Avenue du Bourget, n°1 - BOUR 02/29
BE-1140 Brussels
Belgium

- An electronic version of the progress/final report must be sent no later than by the deadline (30/11/2013) to the following e-mail address: eacea-em-consortia@ec.europa.eu
- *You are strongly advised to send your report by registered post (express courier) to ensure a record of postage. Additionally, you are advised to keep a copy of it, including any annexes.*
- *Please note that a late submission of the contractually required reports may result in penalties or even cancellation of the specific agreement, in accordance with the General Conditions of the framework partnership agreement.*

PART A: TECHNICAL PART

Instructions concerning the technical part of the Report

The technical part of the Report should provide a **summary of the Erasmus Mundus Joint Doctorate implementation during the period elapsed since the submission of the last report** (or the beginning of EMJD in case this is the 1st report ever submitted).

This summary **must cover all ongoing EMJD editions (/intakes)** as well as the preparatory activities already implemented by the consortium for the next edition (/intake).

When answering the questions below the report should

- **When applicable, clearly specify the edition(s)/intake(s) the information provided refers to**
- **Concentrate on the new elements (/developments) as compared to the last report (or the original application in case this is the 1st report ever submitted).**

Sub-sections 1.a - 1.k and 2 of the report must cover each min. ½ and max. 1 page (excluding possible enclosures).

- 1. Please describe the consortium activities since the submission of the last report (or the approval of the original application in case this is the 1st report ever submitted) for what concerns:**
 - a. The consortium organisation (administrative, academic, research and financial management) and specific roles of individual partners (including, if applicable, associated partners)**

Our key idea: “PhD Schools in Relativistic Astrophysics”

Since the beginning, our consortium was built with a very good expertise in the field of Relativistic Astrophysics. “Excellence in Science” was our main priority for our PhD training PhD Schools.

In this Final Report, we are pleased to present a number of good practices related to our possibilities in terms of diversity, complementarity and cooperation between all the partners of our consortium in a quite original way.

Let us first recall, that the main characteristic of our program is to have a large consortium with 13 Institutions and Universities in Europe, Asia and South America.

With 10 students per year, it is impossible to ask them to visit all the partners. We have adopted a strategy completely different from the one that is usually used in High Educational Institutions. We have asked the professors to move and to meet students in PhD Schools two months per year. Therefore, the wide extent of our consortium instead of being a problem is now a resource, a reservoir for training.

We would like to underline also, that despite some turbulences that inevitably occurs inevitably in such big consortium, we have succeeded to overcome them and to use this diversity in a positive way by asking the partners of our consortium to pay special attention to these PhD Schools.

Roles of Partner and integration of our consortium

In addition, to the above mentioned PhD Schools, our consortium has paid special attention that for all partners to contribute in the training of our PhD students: either directly by hosting students, in teaching or organising of training schools and workshops.

First of all, Nice University, which didn't host PhD students of the first cycle, had the constant duty to organize with a great success all our PhD Schools with a quite good success. It has not been easy, especially in May with a number of other kind international events (Cannes Festival, Monte Carlo Cup or the Monte Carlo GP for instance) occur on the French Riviera. But the Nice University has always found some solutions for lodging our numerous students and also the professors. Last September, 38 PhD students were welcome for the Joint Common PhD School of 4 Cycles. We capitalized on the access to the International Airport of Nice (France's second largest airport) to connect to the main destinations of Europe.

The Observatoire de la Côte d'Azur, in addition to the presence of their researchers and professors to our PhD Schools, have also given to our students the opportunity to visit an observatory and to see telescopes.

During the first month of their arrival in September 2010, we have organized a visit in the beautiful site of the "Plateau de Calern", where our PhD students visited the telescope observing facilities including the 1m lunar laser ranging experiment and the telescopes used by Antoine Labeyrie for optical interferometry. They have also shared a dinner with the technical operating staff.

In Mont Gros, they have visited the 77 cm historical Henri Chrétien refractor hosted by the dome that was designed and made by Charles Garnier and Gustave Eiffel in the 19th century.

We have organized meetings and workshops in Rome and Ferrara. We have organized also two workshops in Université de Savoie-PRES de Grenoble in April and October 2011.

Our German partners have contributed mainly with many lectures in our PhD Schools.

Stockholm University has hosted the prestigious International Meeting on General Relativity: the 13th Marcel Grossmann conference. Initially, it was planed also to do a longer period of activity in Stockholm for all students. But this could not happen due to practical reasons which constitutes one of our regrets maybe.

Our Estonian partner, Tartu Observatory, participated actively to our PhD Schools through the invaluable expertise of Jaan Einasto in Large Scale Structures of the Universe. He came many times to our Schools and attended also very actively to our consortium life.

China and Brazil were not forgotten. In October 2011, we offered the possibility to our PhD students to present their research in the Galileo XuGuanqui Meeting.

In June 2013, our Brazilian partner welcomed our PhD students in Rio de Janeiro for a workshop.

It was not possible for our students of the first cycle to visit the Institute of our Indian partner since we were quite busy organizing so many Schools. However, our local coordinator Prof. Sandip Chakrabarti participated very actively in the selection process: for our Indian applicants, he organized individual interviews in order to help us to assess the best candidates. In addition, he came often to share his great experience on black holes accretion processes in Astrophysics. His lectures were very appreciated by our students. He also participated to the life of our consortium with helpful advices during our consortium meetings.

Administration of our Consortium: the Faculty

Nice University has in charge the coordination of our PhD Program. Prof. Stéphane Ngo Mai, vice-President is regularly in contact with the Director of the Program and with the coordinator and has frequent discussion the President of Nice University Prof. Frédérique Vidal.

It really is a chance that the University of Nice considers this program at the highest level. This allows flatness difficulties last minute as the problems of seminar rooms and accommodation for students with an effective intervention of the Vice-President. This is an example of good practice : prompt action is essential and crucial in a complex program.

Our IRAP PhD program is composed of a Scientific Staff (the Faculty) in charge of all the scientific part: selection of the candidates, thesis projects, supervising the progress of each candidate, preparation of the PhD School in Relativistic Astrophysics. This Faculty is directed by Prof. Remo Ruffini.

After the selection meeting and the approval of the main list by the Agency, our candidates are officially informed by the coordinator. We gave them 10 days in order to accept our offer. Generally our candidates accepted immediately and then the coordinator starts to write "the convention d'accueil". This document is essential in order to obtain French visa. At the same time, the coordinator communicates the names of the PhD students to Marsh Insurance. In such way, we could send by email the student card. This is very useful because certain consulates asked an insurance. The original card is given to the student at his arrival in Nice.

Financial Management

In add to the Faculty, we have an administrative staff in Nice.

Being assigned to the Office of International Projects Erasmus Mundus, Mr Emmanuel Losero deals with the "EMJD International Relativistic Astrophysics" in taking care of orders, mission's orders and refunds or bills payment as well as verifying that the students are paid every month and by maintaining the budget. At the accounting office, Mrs Veronique Barlet is responsible for collecting EACEA revenue in order to place the dates of opening and closing of the agreement. She manages the "project builder", that is to say that she organizes the credits in two parts : one part "operating costs" and one "payroll" in accordance with the convention established by the EACEA. She also establishes thresholds limiting expenditures and the financial center where the credits are. On the other hand, Emmanuel Losero closely works with the Finance department of the Faculty of Sciences, led by Mr Fabrice Fenouil, through Mrs Amina Benbouazzara who checks the expenses, then Mrs. Veronique Gallo from the accounting agency makes payments. Finally, Mr Julien Chabert saves providers records on the software "SIFAC" so the banking informations could be stored in the database. The Accounting agency also performs the grants' payment. (Mrs Pina Barbaro is in close contact with the students for Bank account, Social security problem, booking rooms in Nice).

The program is coordinated by Prof. Pascal Chardonnet. He is in contact almost everyday with Emmanuel Losero in Nice. The management need a constant follow up.

In addition he discuss every week with Prof. Ruffini in Roma. He knows that he could have the support of Prof. Ngo Mai in exceptional situation. The consortium is informed frequently of the situation by email and 3-4 times per year we organize a consortium meeting.

We really apologize to have exceeded one page, but in this multiple question a) is essential to us and our wish was simply to expose more precisely how our consortium is organized.

b. The payment modalities of the individual fellowships

When we applied in 2009 to EU, we had proposed a challenging new idea to centralize our PhD program in one University in order to avoid disparity between universities and for a natural and simple way of management.

At the conclusion of our first cycle, it is time to have a feedback of our initial idea. From the first and essential part related to the employment contracts, it is a success: not only all our PhD students are paid in their host institution, mainly not located in France, but we have also taken care to have a dedicated employment contract related to the specificities due to mobility. Before their arrival, all our students are covered worldwide with an insurance for this mobility. Very often, the consulates ask for insurance in order to deliver the expected visa. To the students so that they would be able to attend international meetings more easily.

The remaining participation costs (10 months) have been also sent to all the partners hosting students without problem. This is another example of how our initial idea of management works perfectly.

In Nice University, Emmanuel Losero is the referring person who can see in real time the precise situation of our budget. It is really appreciable to be able working according to this logics in order to manage such complicated program.

The fact that Nice University has signed all the employment contracts is also an advantage for the visa request from the students. This University makes the all the administrative documents for the bunch of students once per year, in May-June and we send this “convention d’accueil” to the Prefecture of Nice. Henceforth, they are well informed about this Program and we have good relations with this essential service for delivering the resident permits.

In a same way, this year we decided to collaborate with the social care service in Nice by creating an *association agreement*. Our PhD Program is recognized and if we need some help, we have a referring person: the responsible Mr Gilles Pelosi from the CPAM of Alpes-Maritimes, who can quickly react on our problems. This is a new positive management that we get this year, but in some sense also a consequence of our choice to centralize all activities of management in Nice.

In practice, since all bureaucratic part are well prepared the students can received their salary on the European bank accounts very easily.

Before the arrival of the students, the coordinator communicates to the staff in Nice the names and identity of the students in the main list. In such way, the employment contract is prepared before the arrival of the students.

At the arrival in Nice in September, our non European students open a bank account in Nice. We have an agreement with a bank: the credit card is free and the bank gives 50 euros welcome for all our students.

At the same period, our students will also do the other formalities for enrolment at the faculty, for Social Insurance Card and for Residence Permit.

c. **Promotion activities for ongoing and future editions/intakes**

The promotion of our program is organized as follow:

- 1) We have a dedicated website that is now referenced in Google. If one student is looking specifically for a PhD in Relativistic Astrophysics. If he type “PhD in Relativistic Astrophysics”, then he/she will find as first reference our website: <http://www.irap-phd.eu> and also our partners. On this website we have also courses accessible for all people. We are planning to have a measurement in real time of the number of people who visited our website.
- 2) An important step is to organize the promotion of the program through posters (generally 2000): we use the ICTP in Trieste and its network of HEI in the world. This poster with all the information of our program can be accessible to all master students in many universities in the world. It seems that it is an old fashioned way but still it works well. Each year, we created a new poster with beautiful pictures in Astrophysics and put the summary information about our program. A list of courses and our website where the candidate can find all practical information of our program. We have also put an email address in order that future candidates can ask information. Each year, the coordinator receives spontaneous requests of information from candidates who have seen this poster.
- 3) In addition, we have used the advertising through scientific magazines like Nature, Science and CERN Courier. This was used at the beginning of our program and was very useful to promote it inside the circle of excellence since many professors and scientific managers in Education have seen this information.
- 4) Of course the easier way now is to send information electronically through an electronic mailing list. Each consortium member has his own mailing list and we use them to reach essentially the professors that could inform their students about this PhD program.
- 5) We have also used the network Campus France to distribute our activities as friendly partnership and also some private contacts through some scientific advisors of French Embassies in India and China.
- 6) Finally, we know that the local EMJD structure and the website of the Agency are also useful for our PhD program.

Our conclusion is that our program has increased substantially in terms of number of applications and also which is extremely important for us, in terms of quality. For the first edition we get around 70 applications and for the last edition we got more than 160 one applications from 50 countries. It means that our promotion is giving positive results.

The conclusion of the first cycle is also the pleasure to see that the excellent candidates we have recruited in 2009 got all their promises since the thesis defended are excellent.

Regarding about gender, we are glad to see that our first cycle has 30% female candidates. This number decrease for the second cycle to 22%. But in the third cycle the male candidates are a minority since they are 33%. Therefore, our criteria of excellence in recruitment is not prejudicial to one or another category.

d. **The procedures followed and measures taken for the identification of research projects, the selection of candidates and the allocation of individual research projects**

This is the domain of the Faculty. The coordinator is also the web manager and asks regularly the Faculty for new thesis projects. Once they are approved, they are put on the website. The Faculty is also in charge of the selection process in January-February. A secure web site has been created. All personal data are deleted after selection. Only the coordinator keep this data for a limited period: the duration of the edition. We have informed the CNIL (Commission nationale de l'informatique et des libertés) of our procedure to select candidates since personal data are involved.

We have obtained their agreement provided we put the following sentence in our personal application form for the candidates:

« The candidate is informed and has agreed to the fact that if he/she is selected (proposed for a fellowship, put on the reserve list, or enrolled on a self paying basis) his/her data may be used for the purposes of evaluating the Erasmus Mundus Programme and will be made available to the Agency, the EM National Structures, the EU Delegations and the Erasmus Mundus Doctorate candidate and Alumni Association (EMA), acting as stakeholders of the programme. The personal data is collected and used in accordance with Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on "the protection of individuals with regard to the processing of personal data and on the free movement of such data". The candidate is informed and has agreed to the fact that his/her data will be also transferred to Non-EU partners of our consortium for the quality assessment of the applications. PLEASE READ THIS TEXT CAREFULLY BY CLICKING THE "I AGREE" BUTTON AT THE TOP, YOU AGREE TO THESE CONDITIONS. »

We have a consortium meeting in December to establish the PhD Schools of the next year and to prepare the selection meeting of February. In these meeting all the partners of the consortium participate directly or by skype, or by emails.

e. The delivery of the taught part of the EMJD

The specificity of our program is the creation of **European PhD Training School in Relativistic Astrophysics**.

Our PhD Students of the First Cycle Edition (2010-2013) have attended:

PhD School in Nice September 6-30, 2010
PhD School in Nice Mai 23- June 6, 2011
PhD School in Nice September 5-16, 2011
PhD School in Nice June 4-15 2012
PhD School in Nice September 3-22, 2012
PhD School in Nice May 16-31 2013
PhD School in Pescara June 3-21, 2013
PhD School in Nice September 3-22, 2013

We can see that twice per year, the selected PhD students have attended one month of lectures by world-reknowned professors in one center of our consortium.

We are very proud that, in May 2012, the Nobel Prize of Physics, Murray Gell-Mann and the French Academician, Thibault Damour gave lectures at the International PhD School in Relativistic Astrophysics.

In May 2013, the Director of the Institut des Hautes Etudes Scientifiques, Jean-Pierre Bourguignon contributed to the training of our students.

As already noted our first priority was driven by excellence in science. Therefore, the professors who trained our PhD Students in our Schools were selected upon prestigious institutes all over the world. Among our “famous” scientists who attend regularly our PhD Schools we can cite, by alphabetic order:

Felix AHARONIAN (Dublin Institute for Advanced Studies IR, Max Planck Institut for Kernphysics DE) “Gamma-Ray Production in AGN: sites, acceleration and radiation processes, challenges”; “Why very high energy gamma-rays?” **Lorenzo AMATI** (INAF, Bologna, IT) “Cosmology and Gamma-Ray Bursts”; “ GRB experiements: past, present and furture”; “GRB science with LOFT”

Angelo ANTONELLI (INAF, Roma IT) “very high energy emission from gamma-ray bursts” **David ARNETT**(University of Arizona, USA) “Relativistic Progenitor Models for Core-Collapse Supernovae” and “Turbulence in Stars: Significant Progress” **Carlo BIANCO**(ICRANet, IT) “The Fireshell Model for GRBs”; **Vladimir BELINSKI** (ICRANet, University of Roma, IT) “Cosmological singularity” **Edo BERGER**(Harvard, USA) “the afterglows and environments of Short GRBs: implications for the progenitors and for detectability of gravitational waves” **Michel BOER** (Observatoire de la Côte d’Azur, FR) “Gamma-Ray Bursts” **Valery CHECHETKIN** (Keldysh Institute of Applied Mathematics, RAS RU) “Mechanisms of Supernova Explosions”. **Sefano COVINO**(INAF, Brera, IT) “Polarimetry during the prompt and afterglow phases of GRBs” **Thibault DAMOUR** (Institut des Hautes Etudes Scientifiques, FR) “Gravitational Waves” (4 lectures) **Paolo D’AVANZANO**(INAF, Brera, IT) “Constraining the progenitors of long and short GRBs trough the study of their environments” **Paolo DEBERNARDIS** (University of Rome, La Sapienza,IT) “Cosmic Microwave Background Observations” (2 lectures) **Massimo DELLA VALLE**(Director of Naples Observatory, IT) “Supernovae and Gamma-Ray Bursts” **Nathalie DERUELLE** (APC, FR) “General Relativity”; **Jan EINASTO**(Tartu Observatory, EE) “Large Scale Structures”; **Chiara FERRARI**(OCA, FR) “ ” (University **George FULLER** (University of San Diego, USA) “neutrino Flavor Physics in Gravitational Collapse and Cosmology” **Filippo FRONTERA** (University of Ferrara, IT) “Comptonization signatures in GRBs” **Giancarlo GHIRLANDA**(INAF, Brera, IT) “Gamma-Ray Bursts in the commoving frame: new insights into their physics”**Paolo GIOMMI** (Agenzia Spaziale Italiana, IT) “Blazars: recent multi-frequency results and new approach to classification” (4 lectures) **Christian GUIDORZI**(University of Ferrara, IT) “GRB Prompt Emission Mechanism: clues from GRB” **Tristan GUILLOT**(OCA, FR) “Planetology” **Eric JULLO** (LAM, Marseille, FR) “Modelling of gravitational lensing systems” (2 lectures) **Cristoph KEITEL**(Max Planck Institute for Nuclear Physics, DE) “Extremely high-intensity laser interactions with fundamental quantum systems” **Hagen KLEINERT** (Free Univerity of Berlin, DE), “Multivalued Fields in Condensed Matter Electromagnetism and Gravitation”; “Conformal Gravity with Fluctuation-Induced Einstein Behavior at Long Distances” **Roy KERR** (University of Canterbury and ICRANet, NZ) “Kerr Metric and its Generalizations” **Tom KIBBLE** (Imperial College London, UK) “Genesis of Electroweak Symmetry Breaking” (3 lectures) **Michael KOPPITZ**(Max-Planck Institute für Gravitationsphysik Albert-Einstein Institute, DE) “Numerical Relativity” **Ioka KUNIHITO**(IPNS, JP) “Gamma-Ray Burst without Baryonic and Magnetic Load” **Thierry LANZ**(OCA, FR) “ ” **Jim LATTIMER** (Stony Brook University of New-York, USA)“Neutron Star Structure” (3 lectures) **Claus LAEMMERZAHN** (ZARM, University of Bremen, DE)“The Equivalence principle” **Francesco LONGO**(University of Trieste, IT) “High Enery Emission from Gamma-Ray Bursts” **Manuel MALHEIRO**(Instituto de Fisica, Universidade Federal Fluminense, Niteroi,BR) “SGRs and AXPs: massive Rotating White Dwarf versus Magnetars” **Silvia MASI** University of Rome, La Sapienza, IT)“Cosmic Microwave Background Observations” (2 lectures) **Nikolaos MAVROMATOS** (King’s College London and CERN, UK) “Neutrinos and the Universe(4 lectures) **Anthony MEZZACAPPA** (Oak Ridge National Laboratory, USA) “Core Collapse Supernova Theory” **Paolo MAZZALI**(Max Planck Institute for Astrophysics, Garching DE) “Supernovae and Gamma-Ray Bursts” **George MEYNET** (Unievrsité de Genève, CH) “Rotating Massive Star Model” (3 lectures) **François MIGNARD** (Observatoire de la Côte d’Azur, FR) “Introduction to Space Astrometry: the Gaia Mission” **Dmitrij NADYOZHIN**(ITEP, RU) “Neutrino Transport in Collapsing stellar Cores” **Hermann NICOLAI** (AEI, DE) “Development on BKL work”; **Christian OTT** (CALTECH, USA) “General Relativistic Simulations of Stellar Collapse and Black Hole Formation”, “Gravitational Waves” and “Core-Collapse Supernovae Mechanism and its Multi-Messenger Signatures” **Volker PERLIK** (ZARM, University of Bremen, DE) “Gravitational Lensing beyond the weak-field approximation” **Chris PETICH** (Max) “ Physics of neutron star crusts”;“Ultracold Quantum Gases” **Elena PIAN**(Scuola Normale Superiore di Pisa, IT) “Observations of Supernovae and Gamma-Ray Bursts and their environments” **Mikhail POPOV** (ENS Lyon CRAL) “nucleosynthesis in Supernovae with tracer particle method” **Mandolesi NAZZARENO** (INAF IASF, Bologna, IT) “CMB Cosmology” **Mario NOVELLO** (CBPF, Rio, BR) “Bouncing Cosmology” ; **Mirzoyan RAZMIK** (Max-planck Institute for Physics, Munich, DE) “Light in our life and in Science: how do we measure it?” **Piero ROSATI** (ESO, Garching, DE)

“Gamma-ray Bursts” **Tania REGIMBAU**(OCA, FR) “Gravitational waves ” **Kjell ROSQUIST** (University of Stockholm, SE) “Singularities and General Relativity” **Remo RUFFINI** (ICRANet and University of Rome La Sapienza, IT) “GRB, Black Holes and Neutron Stars”; **Felix RYDE**(KTH, Stockholm, SE) “Photospherical emission in GRBs and the role of subphotospheric emission” **Gianpiero TAGLIARERRI**(INAF, Brera, IT) “The X-ray and optical light curves of the GRB afterglow” **Lev TITARCHUK** (University of Ferrara, IT) ” X-ray spectral index correlations vs mass accretion rate in neutron star and black holes ”**Farrokh VAKILI** (Observatoire de la Côte d’Azur, FR) “Introduction to optical interferometry and high angular resolution astrophysics: state of art, results and future prospects” **Gregory VERESHCHAGIN** (ICRANet, IT) “Thermalization and collective effects in Astrophysics” **Jean-Yves VINET**(OCA, FR) “Gravitational Waves” **She-Sheng XUE** (ICRANet, IT) “The Physics of electron-positron plasma”; **Lou YUQUNG**(Center for Astrophysics, CN) “Quasi-Spherical Self-similar HD and MHD Core Collapse and Rebound Shocks”.

We put this list not to occupy space but really with the spirit to show how many scientists from all part of the world took part in our challenging project. It is also our personal way to thank all of them in an official document.

This allows us to underline also the efforts we have done to bring all these Professors and students during these PhD Schools. We hope that our efforts have contributed to increase also the visibility of EU projects in a very competitive international field.

This helps us to do the administrative formalities for the new students and to create a “spirit of a School” at Doctoral Level since we mix all editions.

f. **The overall supervision of doctoral candidates**

This is the matter of the Faculty. But we also used the expertise of an external professor visiting us during our PhD Schools.

The Doctoral Candidate is required to provide her/his Thesis Adviser (and Co-Adviser, if applicable) of all necessary reports. It is her/his duty to point to the Thesis Adviser (Co-Adviser) any difficulty encountered. The frequency of regular work meetings (e.g. weekly periodicity) is agreed upon at the beginning of the thesis between Doctoral Candidate and Adviser/Co-Adviser. All parties are bound to conform to the obligation of regular work meetings.

Two yearly reports on the progress of the thesis work is prepared by the Doctoral Candidate and presented in the two one-month joint scientific activities. A full list of courses, seminars, conferences and other relevant activities carried out is included. These reports are also submitted to the Faculty.

The Thesis Adviser accepts to reserve a significant part of her/his time to follow the Doctoral Candidate's work and takes full responsibility for the thesis supervision, even when a Thesis Co-Adviser contributes to it. She/he will actively participate in deciding how the work should progress on the basis of partial results, will point out to the Doctoral Candidate the scientific progress that her/his results are bringing, as well as the possible objections and criticism.

The Thesis Adviser, with the assistance of the Co-Adviser (if applicable), discuss twice a year the progress report with the Doctoral Candidate, assess its content and propose the necessary modifications before it is sent to the Faculty. The Thesis advisor may submit an assessment to the Faculty, if deemed necessary, and particularly whenever problems with the Doctoral Candidate's work begin to appear. The Doctoral Candidate receives a copy of such an assessment.

The Faculty monitors the scientific progress of each Doctoral Candidate. In agreement with the Thesis Adviser and, if necessary, of additional experts sought for this purpose, the Faculty may suggest ways of improving the Candidate's overall progress.

g. The services offered to doctoral candidates (and more particularly with regards to the mandatory mobility parts of their EMJD) and the languages used (regarding research activities and language learning possibilities)

The mobility of our students is enhanced due to the fact that we have a solid scientific network and each partner provides with great facility the lodging house, office and local help for students during the mobility period. This mobility is discussed with the supervisor in charge of the thesis and also with the Faculty. Then the student sends to the coordinator his mobility track to fill the EM Mobility Database.

Due to our spirit of « PhD School », the mobility is also seen improved by the fact that all students know themselves and it happens that they visit each other in special occasions like birthdays. They also exchange scientific information on links, interesting papers. The feedback from them is that our idea is very welcome. They didn't expect such "School" at PhD level.

Initially in our objective, the Doctoral Candidate must validate at least 180 hours of courses, lectures and seminars every year – as attested by the Faculty. With all the PhD Schools we have done much more to each student.

Each of our PhD students are doing his thesis in very good conditions: he has good office, access to Library online or of the University/Lab Hosting Institution. They all have a personal computer in such way they can continue their work even if they are not in their Host Institution. Which is the case for mobility period or when they attend meetings. If there is a difficulty, he/she knows that he could discuss directly with the coordinator. In such case the coordinator and the Local coordinator find a solution.

In the host institutions, in addition to courses, seminars and participation in topical schools, the students also follow language courses in order to foster their practice and knowledge in languages such as English, French, German, Italian or Swedish.

h. The EMJD evaluation and monitoring mechanisms

In conclusion, we can also notice that our PhD Schools were a kind of laboratory where invited professors delivered lectures to our PhD Students, but also took part on a general brain-storming on our PhD Schools. We are thinking how to use and to disseminate the comments of our professors and the feedback of our students that could be a Quality Label for PhD programs.

Our PhD students contributed also to our reflection process in order to improve the quality of our program.

In each cycle, we have a representative of the students in such a way that they could express their evaluation of the program anonymously if they wished. We pay special attention to their remarks in order to improve the system. Each year the coordinator asks the students to write a free report about all the activities of the past year. Then the coordinator presents this report to the consortium and proposes improvements related to students' suggestions.

One of the critics was to make a global effort to synthesize, in a better way, all the information needed. It was done by transmitting emails to the new students.

The coordinator decided to use the reflection of students for preparing a new practical tool, in the form of a brochure that will become online from our website (www.irap-phd.eu).

We will also promote more active to promote our PhD Schools and to show their impacts in the training process.

Let us also recall the IRAP PhD Faculty, composed of up to three Members for each Institutions, is in charge of evaluating and monitoring the Program.

Namely :

- Defines the admission procedure of the students to the IRAP PhD program, defines the academic curriculum of the program, assigns thesis topics, assigns the first and second supervisor to each candidate, decides whether candidates performance is good enough to grant continuation of the program.
 - Authorizes the defense of the thesis and approves the composition of the defense committee.
 - Oversees the fulfillment of the duties of the IRAP PhD candidates, the duty of the host Institutions and the duty of the coordinating Institution.
 - It activates mediation procedure for any problems would arise in the IRAP PhD Program.
 - Appoints eligible new partners to the Consortium, organizes workshops.
 - Decides marketing/advertising strategies of the program, as well as the networking between current, past and perspective candidates and their relationship with the labor market.
 - Oversees the quality of the program, also by collecting evaluation forms from the candidates.
- i. **To describe how, joint programme implementation has improved graduates' employability, enhanced overall program sustainability and research results' dissemination foreseen. (*Question relevant for final report only*).**

In conclusion, our PhD students have had a unique opportunity to attend “private” lectures or seminar by the most outstanding expert in their fields of expertise. The list above is impressive and shows also the work done to organize these schools with so many different experts coming from distant countries and institutes. We take this opportunity to thank the agency to give us the possibility to organize such exceptional events for our PhD Students.

Thus, we have shown that it is really possible to create a “spirit of school inside a PhD “. This idea acts also as cement between partners and also reinforces the students individually, simply because they are not isolated in one lab doing their thesis but are really actors inside a community.

We really think that our objective of Excellence in Science was reached successfully with this first bunch of students. In fact, the first two thesis already defended have received laudatory report from external referees. The two first PhD students, Ms Ana PENACCHIONI and Mr Andrey BARANOV got also their first “job” after their thesis dissertation. A post-doc in Rio de Janeiro for Ana and research position in Keldysh Institute for Applied Mathematics for Andrey.

The conclusion of the first cycle gives us a way to appreciate to work done on this bunch of students. The scientific results of the first circle students is well satisfactory, since the results of their thesis has been published in important journals of physics, and some of them have been already offered post-doctoral fellowship in their fields or positions in the important institutions. We have include the report done by an expert well know in the field of stellar evolution Prof. Georges Meynet from Geneva University.

Sustainability

We are glad to mention that our experience in PhD training at an international level was recognized by the most important institution in Brazil for Educational and Research Project: CAPES. An agreement was signed between this prestigious and important Institution and ICRANet in order to implement our ideas and experience in PhD Students training. This very good initiative came from a new and fast developing country. As we can see, our good practice of our actions in matter of integrated structure in terms of training were used. Our many years of experience in this field have convinced Brazilians on our capability to organize and manage in terms of program operation and quality. We are very proud that our experience could be used. This is another example of good practice.

j. The final degree recognition status in each of the degree awarding institutions (and more particularly the progress made toward the award of joint degrees)

In our Application and in our Consortium Agreement we have made together a strong effort to prepare the good necessary conditions to deliver a Joint Degree. Our efforts have been both in the administrative part with a very precise consortium agreement and in practice with excellent International PhD Schools involving all the Partners.

In our consortium agreement we have mentioned in details all essential points to deliver a Joint degree.

All the thesis of our PhD students are written in English as the common language to all the Institution of the IRAP PhD.

We have described a very good procedure of thesis defense. We recall here that the Thesis Adviser, in agreement with the Candidate, proposes to the Faculty at least two Referees, external to the IRAP PhD and its Partner Institutions, whose duty is to assess the quality of the manuscript and its correctness. The Faculty immediately informs the Doctoral Schools, of its decision and nominates the Referees. The latter receives the complete manuscript with sufficient time for a review – in any case not less than 2 weeks. Each Referee, following her/his assessment duly and amply documented in a written report in English, recommends or not the authorization for the thesis defence.

Despite our strong efforts to realize an International PhD Training School at the highest level in Relativistic Astrophysics, there are still some bureaucratic problems regarding the joint Diploma. In the spirit of our teaching and our way of training our PhD Students, we thought to have realized an International training involving all partners of our network (including professors and PhD students).

Unfortunately, for many High Educational Institutions, the Joint or Multiple Diploma is still related to the "physical presence" of PhD Students in "their" Institution.

We were surprised that our strong efforts to train jointly a bunch of students were not enough. It is mainly due to local legislation and regulation laws for Joint Diploma.

Therefore, we encourage strongly HEI in Europe also to see differently the vision of a Joint Degree. In our main idea, numerous PhD Schools involving high quality research and education, good integration of partners and a good management is also a way of training jointly PhD students, without the necessity to have physically the students standing in one or another University.

Nevertheless, we decided to continue our effort for the high standard of our PhD Schools, and to convince administrative staff of all the Universities partners that it is timely to think differently. From our side, we will follow recommendations of the HEI in order to attain our objectives to delivering this Joint Diploma to our PhD students

For the first cycle, due to the delay of certain national laws on joint degree, it has not been possible to converge our initial desire in our application. This despite numerous meetings with Info Partner, some of which could not but observe that their supervisory authorities did not allow them to legally issue a joint degree.

That's why this year, we deliver at least a double degree to all our students and we continue our efforts to enable the delivery of this joint degree for our upcoming promotions thesis.

k. Other related activities that may directly benefit the EMJD

We really think that we have invented a new way of training PhD students at international level.

Usually, what is done is case of a "standard" double diploma in Europe, the PhD Student spend generally one year in one place and two years in another place. He attends alone or with his PhD Advisor two or three International conferences and School during his thesis. He must follow some extra hours of formation.

What we have created is completely different: our students first start to meet each other for 3-4 weeks in September in Nice. Not only they can do administrative formalities (opening bank account, signing employment contract, having a presentation by The Coordinator of the program and the mobility) but they attend also high level courses and they start to know each other.

The students could discuss with the Director and the Coordinator of the program about all aspects of their future thesis and the EMJD program in general.

According to us, this first month is really important.

In addition, our PhD students will follow 5-6 months of courses together with high level scientists from all part of the world. In some sense, during their thesis our PhD Students are already in the "market labor" . Our approach is reminiscent of "Grandes Ecoles" in France or the prestigious American Universities.

We cannot appoint permanently a Nobel Prize like in some prestigious Universities but we could for few days during our School for the benefit of our students.

We are glad that the Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES) has signed an agreement with one of the Institutions of our consortium: ICRA Net.

http://www.icranet.org/documents/agreementICRA Net-Capes_eng.pdf

Each year five fellowships for Brazilian students will be granted. Each fellowship will last for three years with the final PhD degree. This is an example of good practice of our EMJD program.

We now hope that more and more High Educational Institutions in Europe will understand the quality and the originality of our PhD training program and that could be a new way to reach a joint diploma through this excellence in science. This is an example of good practice that could perhaps be used in other EMJD programs.

2. Describe any positive experiences and/or, problems encountered during the period covered by this report related to the Erasmus Mundus Joint Doctorate course management and possible improvements to be envisaged

We would like to make five more comments:

1) In addition to these PhD Schools, our consortium has paid special attention to all partners could to contributing to the training of our PhD students: directly by hosting students, or in organisation of training schools and workshops. This part will be developed more widely in the role of partners. This contribute to a better mutual understanding between partners institutions.

2) We clearly saw that organizing so numerous and so prestigious PhD Schools required a very good management. And also to have a dedicated budget for mobility of students and professors. It was our initially choice to use 2 months per year of the participation costs in order to organize the PhD Schools in Nice. During these PhD Schools, our PhD students have used the student lodging houses facilities provided by the Nice University. The University has given all necessary facilities like rooms for seminars, Internet access and canteens for lunch.

3) We have also made a strong effort to create the outreach of these lectures to any interested person through our website with the authorization of the professors.

We also plan to prepare an e-learning platform in order to disseminate our experience. We have filmed many lectures and we are also thinking to have a web-TV in a way that our PhD Schools could be accessed by all the PhD Students in real time and the other registered students could ask questions during the lectures.

4) Finally, during many discussions in these PhD Schools, the invited professors have helped us to improve our program. Their presence was, for us, not only precious by their lectures, but also by their advices as an “external committee” experts. This is our wish to create a High Quality Label for PhD Programs.

5) During our PhD Schools, each student presents a research report in a seminar of 30-50 minutes. For them, it is their first experience to speak in front of an audience of international experts. We see clearly at the end of the first cycle that our PhD students are no longer have any fear of public speaking and are well trained to answer questions. For us, these reports give us a true evaluation of their research works. It is a constant monitoring. In addition to their publications.

3. If applicable, provide herein the necessary feedback where a follow-up has been requested by the Agency in the previous progress report and/or final report.

The Agency asked us to have a particular attention to the employment contract for our PhD students especially regarding the net and the brut salaries. We have taken into account this remark and we have prepared an employment contract in English where the net and the brut salaries are clearly mentioned.

This document is given to our PhD students. It is also on our Intranet pages where all our students and consortium members have an access.

We have also attached the present document in our final report.

The duration of our program is 36 months, for the first cycle we have decided to offer a last month of PhD courses in Nice (lodging and meals) for all our PhD students. In such way it was also the first time that 4 PhD cycles were together. It was also the occasion for them to meet for the last time before they defend their thesis. For all PhD students of the first cycle we have also extend the Marsh Insurance and the resident permit for Cat A.

4. Degree awarded

Summary Data (Cycle I: 2010-2013)

	Edition	Third Country Doctoral Candidates		EU Doctoral Candidates	
		With an EM fellowship	Without an EM fellowship	With an EM fellowship	Without an EM fellowship
Number of 3 rd Country Doctoral candidates enrolled (for the ongoing editions)	1				
	2	6		4	
	3				
	4				
	5				

	Name of the Degree awarding institution (add rows if necessary)	Name of the Erasmus Mundus Degree awarded
A	University of Nice Sophia Antipolis	PhD in Relativistic Astrophysics
B	University of Savoie	PhD in Theoretical Physics
C	University of Roma La Sapienza	PhD in Relativistic Astrophysics
D	University of Ferrara	PhD in Physics
E	University of Stockholm	Doctor of Philosophy Degree
F	Freie University of Berlin	PhD in Natural Things
G		

Annexe 1: Example of Evaluation Report Thesis

Annexe 2: Employment contract in English



Prof Georges Meynet
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A qui de droit

Versoix, le 8 octobre 2013

Concerne : Rapport sur la thèse de Monsieur Andrey Baranov

Chère Madame, cher Monsieur,

Le manuscrit de thèse intitulé "Pair-Instability Supernova Explosions and Gamma-Ray Bursts" par M. Andrey Baranov présente des résultats originaux et très intéressants obtenus par l'auteur durant son travail de thèse. Le texte est très bien écrit, dénotant une grande clarté dans l'expression, une très bonne compréhension de la physique et des défis posés actuellement par les différentes observations touchant les sursauts gammas longs. Par conséquent ce manuscrit démontre les très bonnes capacités de chercheurs de M. Baranov et mérite très largement d'être accepté comme manuscrit de thèse. Dans ce qui suit, je décris plus précisément le travail effectué par le candidat tel qu'il ressort de la lecture de ce manuscrit et quelques considérations sur les principaux résultats scientifiques obtenus.

La thèse est organisée en 8 chapitres. Après une introduction très bien faite sur la physique stellaire, les modèles de polytropes, les supernovae et les gamma ray bursts (chapitre 1), le chapitre 2 est dédié à une description plus détaillée des supernovae par instabilité de paires, sujet central de ce travail.

Le chapitre 3 décrit ce qui a constitué une partie importante du travail de thèse du candidat, c'est-à-dire l'écriture d'un programme permettant de suivre l'effondrement du cœur en fin d'évolution provoqué par le phénomène de création de paires qui selon les cas aboutit soit à l'effondrement en trou noir, soit à une explosion induite par les réactions nucléaires qui détruit complètement l'étoile.

Les résultats de ce code sont présentés et discutés dans le chapitre 4. La table 4.1 est particulièrement intéressante montrant qu'un cœur de masse donnée peut avoir un destin final différent selon son énergie de liaison. Les graphiques 4.6 et 4.7 montrent deux résultats à relever dans ce travail : d'une part le résultat impliquant l'existence d'une énergie de liaison maximale pour que l'effondrement du cœur conduise à une supernova par création de paires, d'autre part une relation entre l'énergie nucléaire dégagée au moment de l'explosion et la température maximale atteinte au centre. Cette dernière relation est particulièrement intéressante car elle peut être expliquée simplement par la physique du modèle.

Le chapitre 5 décrit assez brièvement les modèles à deux-dimensions de l'explosion. Les observations principales concernant les sursauts gammas sont discutées au chapitre 6. Enfin le chapitre 7 expose les arguments en faveur d'un lien étroit entre sursauts gamma longs et supernovae par instabilité de paires. Les conclusions sont résumées dans le chapitre 8.

La proposition d'associer sursauts gammas longs et supernovae par instabilité de paires est une proposition originale et intéressante faite par Chardonnet et al. (2010). Ce travail examine cette idée à l'aide des modèles 1D et 2D réalisés par le doctorant.

L'auteur invoque la relation indiquée plus haut entre énergie nucléaire dégagée et température maximale atteinte dans le cœur pour expliquer une corrélation qui semble être présente entre l'énergie moyennes des photons émis lors du pic d'émission et l'énergie totale émise par le sursaut en faisant l'hypothèse que cette énergie est émise de manière isotrope (corrélation obtenues par Amati et al. 2009 et qui a suscité des discussion dans la littérature quant à sa réalité, discussion brièvement mentionnée dans le manuscrit).

Une grande qualité de cette thèse est sa clarté ainsi que sa concision. L'auteur va droit à l'essentiel, ce qui de mon point de vue est une grande qualité. Le programme de simulation des explosions de supernovae par instabilité de paires est un outil très intéressant qui, couplé avec des modèles d'évolution seraient très utiles pour déterminer quel type d'étoiles (étoiles de quelle masse initiale, métallicité, rotation,...) seraient susceptibles de terminer leur évolution en tant que supernovae par instabilité de paires.

La connection entre supernovae par instabilité de paires et les sursauts gammas longs est à ce stade une hypothèse qu'il sera intéressant d'étudier plus en détails dans l'avenir. Les résultats obtenus dans cette thèse sont encourageants et indiquent qu'il vaut la peine de creuser cette piste.

En bref ce travail, comme indiqué au début de ce rapport constitue sans l'ombre d'un doute une démonstration de la capacité d'Andrey Baranov à entreprendre une carrière de chercheur, capable de proposer des scénarios originaux rendant compte de faits observationnels, de les tester par des simulations numériques et par des considérations physiques, de donner des directions de recherche pour le futur et d'exposer clairement les résultats de ses recherches.

Avec mes meilleures salutations



Prof. Georges Meynet



FIXED-TERM CONTRACT

Please note that only the French version of the IRAP EMJD employment contract is legally binding. The English version is provided for information purposes only.

Considering the French amended Law No 84-16 of 11 January 1984 outlining the statutory provisions of the French National Public Service and in particular its article 4, second paragraph;

Considering Article L.412.2 of the Code of Research

Considering L 951-2 of the Code of Education

Considering Decree No 86-83 of 17 January, as amended, pertaining to the general provisions applicable to non-permanent staff of the State.

Considering the Agreement signed by the University of Nice-Sophia Antipolis and the Educational Audiovisual and Culture Executive Agency (EACEA) for Erasmus Mundus and External Cooperation in date of

Between the undersigned,

The President of the Nice Sophia Antipolis University

Mrs Frédérique VIDAL

on the one hand

and

Mr...

Family name or married name Common last name:

Surname (if different from above):

First name:

Date and place of birth:

Visa number:

Address: UFR Sciences - Projet Internationaux – Bâtiment Petit Valrose – Bureau 102 – 28 avenue Valrose – 06108 NICE Cedex 2

Nationality:

on the other hand,

It is agreed as follows:

Article 1: Object

Mr... is recruited on a fixed-term contract, on a full time basis, from **1st September 2013 to 31st August 2015** within the framework of the European program ERASMUS MUNDUS as a contractual public employee.

It is specified that the establishment of this contract does not confer any rights to transformation into a future employment within the State budget.

Article 2: Assignment

During the duration of this contract, Mr... will be assigned to the doctoral school of basic and applied science (*Ecole Doctorale SFA*) located at Parc Valrose, 28 avenue Valrose, 06108, Nice Cedex 2.

A research activity as a PhD student on the following topic will be conducted:

Furthermore, attendance of Mr... will be periodically monitored.

Article 3: Length of service and leave

Mr... performs a full-time service, i.e. 1607 hours per year. His/her schedule will be determined by the head of his assigned service.

The interested party is subject to the system of paid annual leave and leave due to the reduction in working times applicable to employees of the University. Statutory paid leave must be taken during the duration of the contract depending on the needs of the service.

Sick leave, injury-on-duty leave, maternity, discipline and termination are governed by the provisions made in French Decree 86-83 of 17 January 1986.

Article 4: Remuneration

Mr... will receive a monthly remuneration pertaining to the “new increased index” (*Indice Nouveau Majoré*): 417 (i.e. 1930.71 € as at 1st July 2010). The net salary is 1594 EUR

His/her remuneration will bear the levies imposed by the legislation in force.

This remuneration will be deducted from the CC: 933, CF: F10, Convention: 13EAC001SRAR

Article 5: Supplemental pension plan

The interested party is affiliated to the supplemental pension plan established by the French Decree No 70-1277 of 23 December 1970 (IRCANTEC, i.e.: *the supplementary pension institution of non-permanent staff of the State and public authorities*).

Article 6: Social insurance

Mr... is subject to the Law pertaining to Social Security, occupational accidents and diseases.

Mr... will be covered for the duration of the fixed-term contract by the private insurance MARSH.

Article 7: Geographic mobility

As part of his/her researches, Mr... will be moving to other institutions of the Erasmus Mundus Program, within the European Community and/or outside Europe.

Article 8:

Mr... is subject to the obligations of all public officers, including hierarchical obedience and reserve requirement. Mr... is bound by professional secrecy towards third parties regarding activities performed at the University and his/her laboratory, during the term of his contract as well as after leaving the University.

In the event that work carried out would enable the development of manufacturing processes or techniques that could be patented, the patents or knowledge, will be the property of the University or that of the third party sponsor of the contract according to the clauses thereof. Mr... must expressly request authorisation to publish from his/her hierarchical authority.

Article 9:

Regarding the matters not provided for in this contract, the interested party will depend on the

provisions made in the amended French Decree No 86-83 of 17 January and which he has read.
In case of litigation relating to the application of this contract, jurisdiction is given to the Administrative Tribunal of Nice.

A "Doctoral Candidate Agreement" is attached to this contract.

Signed in Nice on 1st September 2013

THE PRESIDENT OF THE UNIVERSITY

Frédérique VIDAL

THE INTERESTED PARTY

Mr...

Signature preceded by the words "read and approved"

Issued in duplicate:

- The interested party
- HR Dpt.
- Copy to the coordinator of the Erasmus Mundus Program

PART B: EM FELLOWSHIP HOLDERS REPORT

<i>Doctoral Candidate name (first name - LAST NAME)</i>	<i>Enrolment date in the Joint Programme*</i>
Andrey BARANOV	September 2010
<i>Name and Institution of the Doctoral Candidate Supervisors*</i>	
Prof. Pascal Chardonnet, LAPTH , Université de Savoie PRES Université de Grenoble	
<i>Title of the EMJD research project</i>	
Pair instability supernovae and gamma-ray bursts	
<i>Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)</i>	
<p>My work is focused on numerical simulation and physical analysis of Pair-Instability supernovae (PISNe) explosions. This phenomenon is related to the end of life of very massive stars, which are very important element of stellar evolution and galaxy formation, and also could be related to gamma-ray bursts (GRBs). Pair-instability supernovae explosions were analysed using various numerical codes. One-dimensional computations were used to establish a range of masses and initial conditions where this type of explosion is possible. The role of hydrodynamical instabilities in the propagation of shockwaves during the last stage of the explosion was studied using two-dimensional code based on PPML method. A possible connection between PISN explosions and GRBs was studied in my work. It was demonstrated that the main characteristics (energy budget, timescale of emission, time-variability) of PISN explosion are compatible with GRB phenomenon. A possible interpretation of the correlation observed in GRBs between the spectrum peak energy and equivalent isotropic energy of emission was proposed. Explanation of non-thermal spectra of GRBs was suggested. For that purpose I spent a few months in the University of Ferrara as a part my mobility.</p>	
<i>Main activities implemented by the doctoral candidate since the delivery of the last report</i>	
<p>During the last year of my Ph.D. I summarized results obtained in the first two years. Two articles were submitted to peer-review journals and accepted for publication. The article in the Astrophysical Journal is dedicated to the problem of nucleosynthesis in non-spherical supernova explosion. The second article was accepted in Astronomy & Astrophysics, and studies the explosion of very massive stars owing to pair instability.</p> <p>Most part of time I dedicated to writing of my PhD thesis which I defended 9th of October, 2013.</p> <p>I have attended conferences: Rencontres de Moriond, La Thuile, Italy, March 9-16, 2013 The 2013 yearly ICRANet Scientific Meeting on Relativistic Astrophysics, ICRANet, Pescara, Italy: 3 June-21 June, 2013.</p> <p>EMJD School May 16th-31st, 2013</p>	
<i>Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)</i>	
PhD thesis completion	

Journals

- A.A. Baranov, P. Chardonnet, V.M. Chechetkin, A.A. Filina, M.V. Popov, Aspherical Nucleosynthesis in the He-layer of a Core-collapse Supernova Using the Tracer Particles Method, *The Astrophysical Journal* (accepted)
- A.A. Baranov, P. Chardonnet, V.M. Chechetkin, A.A. Filina, M.V. Popov, Multidimensional Simulations of Pair-Instability Supernovae, *Astronomy & Astrophysics* (**accepted** 09/05/2013)
- A.A. Baranov, N.A. Medvedev, A.E. Volkov, N.S. Scheblanov, Effect of Interaction of Atomic Electrons on Ionization of an Insulator in Swift Heavy Ion Tracks, *Nuclear Instruments and Methods in Physics Research (B)*, 286, pp 51-55, 2012
- A.A. Baranov, V.M. Chechetkin, Did the SN 1987A Outburst Leave a Compact Remnant?, *Astronomy Reports*, 55(6), pp 525-531, 2011 (Original Russian Text © A.A. Baranov, V.M. Chechetkin, 2011, published in *Astronomicheskii Zhurnal*, 2011, Vol. 88, No. 6, pp. 570–576.)

International Conferences

- A.A. Baranov, P. Chardonnet, V.M. Chechetkin, A.A. Filina, M.V. Popov, Explosions of Very Massive Stars and the Role of Hydrodynamical Instabilities, *Rencontres de Moriond, Very High Energy Phenomena in the Universe session*, La Thuile, Italy, March 9-16, 2013.
- A.A. Baranov, P. Chardonnet, V.M. Chechetkin, A.A. Filina, M.V. Popov, Pair-instability as a Possible Explanation of Gamma-Ray Bursts, *Workshop Proceedings «From Nuclei to White Dwarfs and Neutron Stars»*, Les Houches, France, April 3-8, 2011.
- A.A. Baranov, P. Chardonnet, V.M. Chechetkin, A.A. Filina, M.V. Popov, Application of Code Based on Piecewise Parabolic Method on a Local Stencil in Supernova Explosion Model, *Workshop Proceedings «From Nuclei to White Dwarfs and Neutron Stars»*, Les Houches, France, April 3-8, 2011.

Talks and Presentations

- Explosions of Very Massive Stars and the Role of Hydrodynamical Instabilities, *Rencontres de Moriond, Very High Energy Phenomena in the Universe session*, La Thuile, Italy, March 9- 16, 2013.
- Pair-Instability Supernovae and Gamma-Ray Bursts, 13th Marcel-Grossmann meeting, Stockholm, Sweden, July 1-7, 2012.
- New Interpretation of the Amati Relation (poster presentation), *IAU Symposium 279 «The Death of Massive Stars»*, Nikko, Japan, March 12-16, 2012.
- Pair-Instability Supernovae as Possible Explanation of GRBs, *Workshop «Gamma ray bursts, their progenitors and the role of thermal emission»*, Les Houches, France, October 2-7, 2011.
- Pair-Instability Supernovae as Possible Explanation of GRBs, *Workshop «From nuclei to white dwarfs and neutron stars»*, Les Houches, France, April 3-8, 2011.

MOBILITY OF ANDREY BARANOV

- ICRANet, Pescara, Italy: 1-13 October, 2010.
- Meeting of the ICRANet Scientific Committee, ICRANet, Pescara, Italy: 12-18 December, 2010.
- Workshop, ICRANet, Pescara, Italy: 20-27 March, 2011.
- University of Ferrara, Italy: 15 May - 15 June, 2012.
- ICRANet, Pescara, Italy: 1-31 August, 2012.
- University of Ferrara, Italy: 23 October - 10 November, 2012.
- University of Ferrara, Italy: 9-16 March, 2013.
- Workshop+Study, ICRANet, Pescara, Italy: 3 June- 28 July, 2013.

	Title	Period	Duration
1	ICRANet, Pescara, Italy	1 - 13 October, 2010	2 Weeks
2	ICRANet, Pescara, Italy	12 - 18 December, 2010	1 Week
3	ICRANet, Pescara, Italy	20 - 27 March, 2011	1 Week
4	University of Ferrara	15 May - 15 June, 2012	1 Month
6	ICRANet, Pescara, Italy	1 - 31 August, 2012	1 Month
6	University of Ferrara	23 October - 10 November, 2012	3 Weeks
7	University of Ferrara	9 - 16 March, 2013	1 Week
8	ICRANet, Pescara, Italy	3 June- 28 July, 2013	2 Months

Total : 6 Months

Signature :



<i>Doctoral Candidate name (first name - LAST NAME)</i>	<i>Enrolment date in the Joint Programme*</i>
Alberto BENEDETTI	September 2010
<i>Name and Institution of the Doctoral Candidate Supervisors*</i>	
Prof. Remo Ruffini – Sapienza Università di Roma	
<i>Title of the EMJD research project</i>	
Kinetic approach to pair production in strong electric fields and to transparency of relativistic outflows	
<i>Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)</i>	
<p>My research project is devoted to the theoretical study of two physical phenomena in plasma physics, namely (a) electron-positron pairs production in strong electric fields and (b) transparency emission from relativistic outflows.</p> <p>Even though very different in what concerns their macroscopic features, the microphysics of both phenomena (a) and (b) can be described in detail using a common method. This is what we aim to do using a theoretical approach based on relativistic kinetic theory. One of the main motivations behind this strategy is related to the possibility, given by such theory, to study physical systems out of equilibrium from a very general point of view. To do that we solve the relativistic Boltzmann equation with exact collision integrals corresponding to relevant microscopic processes, taking into account the anisotropy of the distribution function in the phase space. On one hand, this technique enable us to describe the evolution in time of the initially out of equilibrium system of electric field and electron-positron-photon plasma up to thermalization. On the other hand, when transparency of relativistic outflow is considered, the opposite behavior of departure of electron-photon plasma from thermal equilibrium can be followed.</p> <p>I attended the schools held at the University of Nice where I also presented my research activity. Large part of my research has been carried out during the two periods of mobility at the Stockholm University. In this occasion I have been involved in most of the activities organized by the research group such I was working with such as seminars and internal meetings. Here I also presented my work.</p>	
<i>Main activities implemented by the doctoral candidate since the delivery of the last report</i>	
<i>Continuation of the work on the transparency of relativistic outflows. Fulfilment of mobility periods in Sweden and France. PhD thesis completion.</i>	
<i>Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)</i>	
<i>PhD thesis completion. Submission of the paper about transparency of relativistic outflows to an international journal. Thesis dissertation on November 14th 2013.</i>	

Journals

- On the frequency of oscillations in the pair plasma generated by a strong electric field, A. Benedetti, W.-B. Han, R. Ruffini, G. V. Vereshchagin, Phys.Lett.B698:75-79,2011.
- Phase space evolution of pairs created in strong electric fields, A. Benedetti, R. Ruffini, G. V. Vereshchagin, submitted to Phys. Lett. A.
- Phase space evolution of pairs created in strong electric fields, A. Benedetti, R. Ruffini, G. V. Vereshchagin, proceedings of the 12th Italian-Korean Meeting to be published by the Italian Physical Society (SIF) in the Volume "Nuovo Cimento C".
- Kinetic approach to the emission from the GRBs photosphere. A. Benedetti, A. Aksenov, I. Siutsou, R. Ruffini, G. V. Vereshchagin. In preparation.

International Conferences

- Phase space evolution of pairs created in strong electric fields, A. Benedetti, R. Ruffini, G. V. Vereshchagin, to be published in the proceedings of the XIII Marcell-Grossmann Meeting.

Talks and Presentations

- On the frequency of oscillations in the pair plasma generated by a strong electric field. IRAP Ph.D. Erasmus Mundus Workshop, April 5, 2011, Pescara (Italy)
- On the frequency of oscillations in the pair plasma generated by a strong electric field. IRAP Ph.D. Erasmus Mundus Workshop, April 3-8, 2011, Les Houches (France)
- Oscillations in the pair plasma generated by a strong electric field. Italian-Korean Meeting, July 4-9, 2011, Pescara (Italy)
- Electron-Positron plasma oscillations: hydro-electrodynamic and kinetic approaches. IRAP Ph.D. Erasmus Mundus School, September 7, 2011, Nice (France)
- Boltzmann equation: from an interacting plasma toward the photospheric emission of a GRB. IRAP Ph.D. Erasmus Mundus Workshop, October 6, 2011, Les Houches (France)
- Electron-Positron plasma oscillations: hydro-electrodynamic and kinetic approaches. Galileo-Xu Guanqui Meeting, October 12, 2011, Beijing (China)
- Phase space evolution of pairs created in strong electric fields "Marcel Grossmann" meeting, Stockholm, Sweden, 1st - 7th July, 2012.

MOBILITY OF ALBERTO BENEDETTI

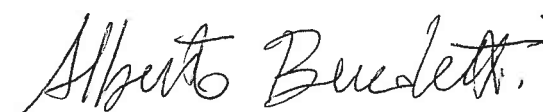
	Host University	Start	Finish	Duration
1	UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS	06/09/10	30/09/10	1 Month
2	UNIVERSITÉ DE SAVOIE – PRES "UNIVERSITE DE GRENOBLE"	03/04/11	09/04/11	1 Week
3	UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS	22/05/11	11/06/11	3 Weeks
4	UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS	04/09/11	18/09/11	2 Weeks
5	UNIVERSITÉ DE SAVOIE – PRES "UNIVERSITE DE GRENOBLE"	02/10/11	08/10/11	1 Week
6	STOCKHOLM UNIVERSTIY	18/04/12	12/07/12	3 Months
7	UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS	03/09/12	28/09/12	1 Month
8	STOCKHOLM UNIVERSTIY	03/02/13	28/04/13	3 Months
9	UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS	15/05/13	31/05/13	2 Weeks
10	UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS	10/07/13	13/09/13	2 Months

Total mobility **France**: 6 Months

Total mobility **Sweden**: 6 Months

Date: 28/10/2013

Signature:



<i>Doctoral Candidate name (first name - LAST NAME)</i>	<i>Enrolment date in the Joint Programme*</i>
Parikshit DUTTA	September 2010
<i>Name and Institution of the Doctoral Candidate Supervisors*</i>	
Prof. Hermann Nicolai Max-Planck-Institute for Gravitational Physics, Albert-Einstein Institute	
<i>Title of the EMJD research project</i>	
The DeWitt Equation in Quantum Field Theory and its Application.	
<i>Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)</i>	
<p>The main research activity is centered around the study of the One Particle Irreducible Effective action in Quantum Field Theory. The approach is to use an equation for the Effective Action, called the DeWitt equation to analyze its structure. The Equation is basically the quantum equation of motion for a given theory relating the first derivative of the effective action with the expectation value of the first derivative of the classical. It is a functional differential equation of no known type, and so in principle it is not easily solvable. There are other difficulties of defining the equation properly. A solution for this equation would give us a good understanding of the structure of the Effective action. We were able to realise a solution of the equation in form of a loop expansion in one of our earlier works. We also point out that the candidate attended schools in Nice, France related to various courses on astrophysics and other theoretical topics in General Relativity, along with a two month research stay in LAPTH Annecy (University de Savoie) in the spring of 2013. These mobility elements have helped him in having more research experience and practical knowledge regarding the field of astrophysics and fundamental physics. The candidate is thankful to Erasmus Mundus Joint Doctorate Program, Grant Number 2010-1816 from the EACEA of the European Commission which provided the funding for the fruitful work during the thesis and the various research stays.</p>	
<i>Main activities implemented by the doctoral candidate since the delivery of the last report</i>	
<p>Our objective was to use this equation in the study of the correlation functions in Liouville Field theory in 2 dimensions. Liouville Field theory being a conformal field theory has special properties, and the form of the position dependent part of the 2,3-point functions are fixed by conformal invariance. What remains to be known are the structure constants of the theory. We checked the proposal for the 3-point functions for Liouville theory using this equation. Further work is under way to analyze whether one could use this equation to yield more information about the structure constants. With this work we expect to understand better the source of the duality of the Liouville coupling constant b with its inverse $1/b$ from the path integral stand point, which is manifest in the proposal for the 3-point function for Quantum Liouville theory. Using a different perspective on the duality, we think we are able to shed some light on this open problem.</p>	
<i>Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)</i>	
PhD thesis completion	

Journals

- Banibrata Mukhopadhyay, Parikshit Dutta; Variation of the gas and radiation content in the sub-Keplerian accretion disk around black holes and its impact to the solutions; *New Astron.* 17 (2012) 51-60.
- Parikshit Dutta, Krzysztof A. Meissner, Hermann Nicolai; The DeWitt Equation in Quantum Field Theory; *Phys. Rev. D* 87 (2013), 105019.
- Parikshit Dutta and George Jorjadze ; Schwinger Dyson approach to Liouville Field Theory.

International Conferences

- P. Dutta and H. Nicolai, « The DeWitt Equation in Quantum Field Theory; P » to appear in the proceedings of the ‘Marcel Grossmann 13’ meeting .
- P. Dutta and H. Nicolai, “The DeWitt Equation in Quantum Field Theory;,” Max Planck conference

Talks and Presentations

MOBILITY OF PARIKSHIT DUTTA

- Erasmus Mundus School, Nice, France: 6-30 September, 2010.
- Erasmus Mundus Workshop, Les Houches, France: 3rd- 9th April, 2011.
- Erasmus Mundus School, Nice, France: 22 May - 11 June, 2011
- Erasmus Mundus School, Nice, France: 4th - 18th September, 2011.
- UNIVERSITE DE NICE SOPHIA ANTIPOLI, Nice, France: 10th May - 30th May, 2012.
- Erasmus Mundus School, Nice, France: 1st - 22nd September, 2012.
- UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE" ,
Annecy, France: 31st March-31st May, 2013.

	Title	Period	Duration
1	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	6-30 September 2010	1 Month
2	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	3rd- 9th April, 2011.	1 Week
3	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	22 May - 11 June, 2011	3 Weeks
4	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	4 th – 18 th September, 2011	2 Weeks
5	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	10th May - 30th May, 2012.	3 Weeks
6	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	1 st – 22 nd September, 2012.	3 Weeks
7	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	31st March-31st May, 2013	2 Months

Total : 6 Months

Signature :

Parikshit Dutta
25/10/2013 .

<i>Doctoral Candidate name (first name - LAST NAME)</i>	<i>Enrolment date in the Joint Programme*</i>
Philipp FLEIG	September 2010
<i>Name and Institution of the Doctoral Candidate Supervisors*</i>	
Prof. Hermann Nicolai Max-Planck-Institute for Gravitational Physics, Albert-Einstein Institute	
<i>Title of the EMJD research project</i>	
<i>Quantum Gravity and Automorphic Forms</i>	
<i>Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)</i>	
<i>Main activities implemented by the doctoral candidate since the delivery of the last report</i>	
<p>The main activities since the delivery of the last report concern the further understanding of the theory of Eisenstein series (which are automorphic forms) in the context of string theory. In particular important, new insights into the mathematical structure of the Fourier expansion of Eisenstein series were obtained. The results of this work were obtained in collaboration with Dr. Axel Kleinschmidt and Dr. Daniel Persson and will be published in a mathematical journal. Furthermore, progress was made in writing a large review article, which will provide an extensive exposition to the theory of Eisenstein series, formulated in the language of Adelic groups. This article will be of direct interest to both physicists and mathematicians.</p> <p>Aside from the scientific progress, I have furthermore spent the last month of the required mobility period in France, at the university of Nice.</p>	
<i>Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)</i>	
<i>PhD thesis completion</i>	

Journals

- P. Fleig, H. P. Gustafsson, A. Kleinschmidt, and D. Persson, “A physicist’s invitation to: Adelic Eisenstein series and automorphic representations,” in preparation .
- P. Fleig, A. Kleinschmidt, and D. Persson, “Fourier expansions of Kac–Moody Eisenstein series and degenerate Whittaker vectors,” in preparation .
- P. Fleig and A. Kleinschmidt, “Eisenstein series for infinite-dimensional U-duality groups,” JHEP 1206 (2012) 054, arXiv:1204.3043 [hep-th].
- P. Fleig, M. Koehn, and H. Nicolai, “On Fundamental Domains and Volumes of Hyperbolic Coxeter-Weyl Groups,” Letters in Mathematical Physics 100 (June, 2012) 261–278, arXiv:1103.3175 [math.RT].

International Conferences

- P. Fleig and H. Nicolai, “Hidden symmetries: from BKL to Kac–Moody,” to appear in the proceedings of the ‘Marcel Grossmann 13’ meeting .
- P. Fleig and A. Kleinschmidt, “Perturbative terms of Kac-Moody-Eisenstein series,” submitted to proceedings of the ‘String-Math 2012’ conference (Nov., 2012) , arXiv:1211.5296 [hep-th].

Talks and Presentations

MOBILITY OF Philipp Fleig

- Erasmus Mundus School, Nice, France: 6th - 30th September, 2010.
- Erasmus Mundus School, Nice, France: 22 May, 2011 - 11 June, 2011
- Erasmus Mundus School, Nice, France: 4th - 23rd September, 2011.
- Erasmus Mundus School, Nice, France: 12th - 16th September, 2012.
- UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE" France: 15 May, 2012 - 15 Jun, 2012
- UNIVERSITÉ DE NICE - SOPHIA ANTIPOLIS, Nice, France: 03rd -28th March, 2013
- UNIVERSITÉ DE NICE - SOPHIA ANTIPOLIS, Nice, France: 01 May, 2013 - 31 May, 2013

	Title	Period	Duration
1	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	6th-30th September, 2010	1* Month
2	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	22 May - 11 June, 2011	3 Weeks
3	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	4th - 23rd September, 2011.	3 Weeks
4	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	12th – 16th September, 2012.	1 Week
5	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	15 May, 2012 - 15 Jun, 2012	1 Month
6	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLIS	03rd - 28th March, 2013	1 Month
7	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLIS	01st - 31st May, 2013	1 Month

Total : 6 Months

Signature :

Philipp Fleig

*16th Oct. 2013
Potsdam, Germany*

<i>Doctoral Candidate name (first name - LAST NAME)</i>	<i>Enrolment date in the Joint Programme*</i>
Bernardo – MACHADO DE OLIVEIRA FRAGA	September 2010
<i>Name and Institution of the Doctoral Candidate Supervisors*</i>	
Prof. Remo Ruffini – Sapienza Università di Roma	
<i>Title of the EMJD research project</i>	
A semi degenerate system of Fermions as dark matter in galaxies and a multi-wavelength catalog of TeV candidate blazars	
<i>Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)</i>	
<p>I worked on the problem of dark matter in galaxies, proposing a system of fermions at a finite temperature as a candidate. This system would also be the found in the core of galaxies, instead of a black hole, the paradigm today. We used observations to constrain the parameter space of the system, and found out that it is in good agreement with the observations we have today. An article is ready to be submitted.</p> <p>On another work, we built a catalog of over 700 blazars that are, or may be, very high energy emitters. We analyse its properties and proposed more than 100 blazars that can be observed with current instruments. Furthermore we provide further evidence against the so called blazar sequence, and showed that our selection scheme is more than 90% efficient in detecting very high energy blazars.</p> <p>Mobility: Erasmus Mundus School – Nice, 15-30 May 2013 Period spent in Université de Nice Sophia-Antipolis for mobility: 10 july – 18 september 2013</p>	
<i>Main activities implemented by the doctoral candidate since the delivery of the last report</i>	
<p>Summarizing the work done so far and writing the thesis on the two subjects mentioned above.</p> <p>Attended conferences: 2013 yearly ICRA Net scientific meeting – 3-21 june 2013, Pescara, Italy (oral presentation) 1st URCA meeting on relativistic astrophysics – 24-29 june 2013, Rio de Janeiro, Brazil (oral presentation)</p>	
<i>Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)</i>	
PhD thesis completion	

**Bernardo MACHADO DE OLIVEIRA
FRAGA**

Publications

Journals

International Conferences

Talks and Presentations

MOBILITY OF BERNARDO MACHADO DE OLIVEIRA FRAGA

- Erasmus Mundus School, Nice, France: 6-30 September, 2010.
- Erasmus Mundus Workshop, Les Houches, France: 3rd- 8th April, 2011.
- Erasmus Mundus School, Nice, France: 22 May - 11 June, 2011
- Erasmus Mundus School, Nice, France: 4th - 18th September, 2011.
- Erasmus Mundus Workshop, Les Houches, France: 2nd - 8th October, 2011
- Erasmus Mundus School, Nice, France: 3rd – 21st September, 2012.
- Erasmus Mundus School, Nice, France: 15th - 30th May 2013
- UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS France: 10 July, 2013 - 13 September 2013

	Title	Period	Duration
1	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	6-30 September 2010	1 Month
2	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	3- 8 April, 2011.	1 Week
3	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	22 May - 11 June, 2011	3 Weeks
4	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	4 – 18 September, 2011	2 Weeks
5	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	2 – 8 october 2011	1 Week
6	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	3 – 21 September, 2012.	3 Weeks
7	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	15 – 30 May 2013	2 Weeks
8	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	10 July – 13 September, 2013	2 Months

Total : 6 Months

Signature : 

Doctoral Candidate name (first name - LAST NAME)	Enrolment date in the Joint Programme*
Christine GRUBER	September 2010
Name and Institution of the Doctoral Candidate Supervisors*	
Prof. Dr. Hagen KLEINERT, Free University Berlin	
Title of the EMJD research project	
Quantum phenomena in the realm of Cosmology and Astrophysics	
Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)	
<p>The thesis will comprise two applications of quantum effects in the large-scale framework of cosmology and astrophysics, as well as discuss some of the observational and data analysis aspects of one of the addressed astrophysical phenomena.</p> <p>The first part will deal with the so-called dark energy problem of cosmology – i.e. the observation that the universe is expanding in an accelerated way. Among the abundance of models trying to explain this kinematic feature of the universe, one of them is to consider the vacuum fluctuations of quantum fields, an energy density constant in space, to cause the expansion. The vacuum energy is a divergent quantity though, and is thus usually discarded as a possible candidate for dark energy. However, by balancing contributions of different quantum fields, a finite value can be achieved, which can correctly account for the expansion of the universe. (<i>article in preparation</i>)</p> <p>In a second project, the focus has been shifted to the analysis of observational data indicating the accelerated expansion of the universe. Within the framework of cosmography, the data from luminosity measurements of type Ia supernovae has been analysed, and kinematical parameters as e.g. the Hubble or the acceleration parameter have been extracted. The conventional approach has here been improved by the introduction of new redshift variables, and by the use of different expansional methods to obtain the fitting curves. Moreover, the analysis has been modified as to directly give results for the equation of state parameter of the universe. These investigations are supposed to back up the model developed in the first chapter from an observational point of view. (<i>article published, one further article in preparation</i>)</p> <p>The third part will deal with the occurrence of Bose-Einstein condensates (BECs) in astrophysical contexts, i.e. in compact objects such as neutron stars and white dwarfs. As unlikely as it may seem, conditions in such environments allow for the formation of BECs due to a favourable combination of temperature and density, and thus it is of interest to investigate the condensation of bosonic particles under the influence of gravitational interactions in the framework of a Hartree-Fock theory. The theoretical framework developed in this chapter has been applied to the case of Helium white dwarfs. Existing works in the literature have been expanded by the inclusion of finite-temperature effects, and the consequences on the density profiles and macroscopic quantities as e.g. the masses of the objects have been derived. (<i>article in preparation</i>)</p>	
Main activities implemented by the doctoral candidate since the delivery of the last report	
<p>Completion of thesis, comprising three projects: Vacuum fluctuations as an explanation for dark energy; cosmography to determine model-independent kinematic parameters of the universe; Bose-Einstein condensation in compact astrophysical objects.</p> <p>Publication of two papers on cosmography; submission of one paper on dark energy.</p>	
Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)	
PhD thesis completion	

Journals

- F. Scardigli, C. Gruber, P. Chen: Black Hole Remnants in the Early Universe. Phys. Rev. D 83, 063507, 2011. arXiv:1009.0882 [gr-qc].
- Aviles, C. Gruber, O. Luongo, H. Quevedo: Cosmography and constraints on the equation of state of the Universe in various parametrizations. Phys. Rev. D 86, 123516, 2012. arXiv:1204.2007 [astro-ph.CO].
- Gruber, O. Luongo: Cosmographic analysis of the equation of state of the universe through Padé approximations. Accepted for publication in Phys. Rev. D, 2013. arXiv:1309.3215 [gr-qc].
- Gruber, H. Kleinert: Observed Cosmological Reexpansion in Minimal QFT with Bose and Fermi Fields. Submitted to Gen. Rel. Grav., 2013.
- Gruber, A. Pelster: Bose-Einstein condensates in white dwarfs. In preparation, 2013.

International Conferences

- Aviles, C. Gruber, O. Luongo, H. Quevedo: Constraints from Cosmography in various parameterizations. Proceedings of the 13th Marcel Grossmann Meeting, Stockholm, Sweden. World Scientific, 2012. arXiv:1301.4044 [astro-ph.CO].
- Gruber, A. Pelster: Bose-Einstein condensates in astrophysical compact objects. To be published in the Proceedings of the Internat. Symposium on Self-Organization of Complex Systems, Hanse Institute of Advanced Studies, Delmenhorst, Germany. Springer, 2013.

Talks and Presentations

- 22.06.-29.06.2013, Erasmus Mundus Workshop, Rio de Janeiro, Brazil (oral contribution)
- 01.05.-29.07.2013, Research Exchange to ICRANet Pescara, Italy
- 13.11.-16.11.2012, International Symposium “Self Organization in Complex Systems: The Past, Present and Future of Synergetics”, Hanse-Wissenschaftskolleg Delmenhorst, Germany
- 04.11.-08.12.2012, Research Exchange to University of Oldenburg
- 03.09.-22.09.2012, Erasmus Mundus School, Université de Nice Sophia-Antipolis, Nice, France (2 oral contributions)
- 21.08.-25.08.2012, 514th WE-Heraeus Seminar “Quo vadis, BEC?”, Bad Honnef, Germany (poster contribution)
- 01.07.-08.07.2012, 13th Marcel Grossmann Meeting, Stockholm, Sweden (oral contribution)
- 29.04.-29.07.2012, Research Exchange to ICRANet Pescara, Italy
- 05.09.-16.09.2011, Erasmus Mundus School, Université de Nice Sophia-Antipolis, Nice, France (oral contribution)
- 04.07.-08.07.2011, 17th International Symposium on Particles, Strings and Cosmology (PASCOS), Cambridge, United Kingdom

- 25.05.-02.06.2011, Erasmus Mundus School, Université de Nice Sophia-Antipolis, Nice, France
- 03.04.-08.04.2011, Erasmus Mundus Workshop “From Nuclei to White Dwarfs and Neutron Stars”, Les Houches, France
- 21.03.-25.03.2011, Erasmus Mundus Workshop / ICRA Net Scientific Faculty Meeting “Recent News from the MeV, GeV and TeV Gamma Ray Domains”, Pescara, Italy
- 13.12.-15.12.2010, ICRA Net Scientific Faculty Meeting, Pescara, Italy
- 06.12.-10.12.2010, 25th Texas Symposium on Relativistic Astrophysics, Heidelberg, Germany
- 05.09.-01.10.2010, Erasmus Mundus School, Université de Nice Sophia-Antipolis, Nice, France

Mobility Christine Gruber

Auxiliary Mobility:

22.06.-29.06.2013, Erasmus Mundus Workshop, Rio de Janeiro, Brazil (oral contribution)
13.11.-16.11.2012, International Symposium "Self Organization in Complex Systems: The Past, Present and Future of Synergetics", Hanse-Wissenschaftskolleg Delmenhorst, Germany
04.11.-08.12.2012, Research Exchange to University of Oldenburg
03.09.-22.09.2012, Erasmus Mundus School, Université de Nice Sophia-Antipolis, Nice, France (2 oral contributions)
21.08.-25.08.2012, 514th WE-Heraeus Seminar "Quo vadis, BEC?", Bad Honnef, Germany (poster contribution)
01.07.-08.07.2012, 13th Marcel Grossmann Meeting, Stockholm, Sweden (oral contribution)
05.09.-16.09.2011, Erasmus Mundus School, Université de Nice Sophia-Antipolis, Nice, France (oral contribution)
04.07.-08.07.2011, 17th International Symposium on Particles, Strings and Cosmology (PASCOS), Cambridge, United Kingdom
25.05.-02.06.2011, Erasmus Mundus School, Université de Nice Sophia-Antipolis, Nice, France
03.04.-08.04.2011, Erasmus Mundus Workshop, Les Houches, France
06.12.-10.12.2010, 25th Texas Symposium on Relativistic Astrophysics, Heidelberg, Germany
05.09.-01.10.2010, Erasmus Mundus School, Université de Nice Sophia-Antipolis, Nice, France

Compulsory Mobility:

		Title	Period	Duration
1	IT	ICRANet Scientific Faculty Meeting, Pescara, Italy	13.12.-15.12.2010	3 days
2	IT	Erasmus Mundus Workshop / ICRANet Scientific Faculty Meeting, Pescara, Italy	21.03.-25.03.2011	1 week
3	IT	Research Exchange to ICRANet Pescara, Italy	29.04.-29.07.2012	3 months
4	IT	Research Exchange to ICRANet Pescara, Italy	01.05.-29.07.2013	3 months

Total of Compulsory Mobility: 6 months, 1 week, 3 days

Signature:



<i>Doctoral Candidate name (first name - LAST NAME)</i>	<i>Enrolment date in the Joint Programme*</i>
Vincenzo LICCARDO	September 2010
<i>Name and Institution of the Doctoral Candidate Supervisors*</i>	
Prof. Filippo Frontera, <i>University of Ferrara, Italy</i>	
<i>Title of the EMJD research project*</i>	
Gamma-ray Lens: Development and Test	
<i>Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)</i>	
<p>The main goal of the thesis concerns the development and test of a broad band (70/100 -600 keV) Laue Lens prototype for opening a new window for the deep exploration of the Galactic and extragalactic sky. No focusing instruments in this band are available till now. It is the first time that the development of a Laue lens for astrophysics is faced with a great effort. To this end, the doctoral student is being involved in a large national project, LAUE, scientifically led by the High Energy Astrophysics (HEA) group(PI: Filippo Frontera) of the Physics department of the University of Ferrara. The project is supported by the Italian Space Agency. The project is now in the design phase and is fully consistent with the timeline of the thesis preparation. The lens is based on the use of mosaic/curved crystals, that are being developed for this project, while the technology for properly positioning the crystals in the lens is the result of the experience gained with another project now concluded. The student will face several issues related to the LAUE project: the choice of the best crystals to be used for the lens, the data analysis of the imager/spectrometer data in the focal plane of the lens for establishing the best orientation of the crystals in the lens, the correction of the systematic errors, like the effect of the gamma-ray beam divergence, the measurement of the built lens petal optical properties and so on. The doctoral candidate will be part of a larger team, making possible a strict direct supervision. Results, also at intermediate level, will be presented in international conferences, like SPIE Symposia</p>	
<i>Main activities implemented by the doctoral candidate since the delivery of the last report</i>	
<p>Diffraction crystals have been employed for focusing photons in the 80 – 300 keV energy range in the framework of the LAUE project. For the first time, bent crystals have been used, taking advantage of their high reflectivity and excellent PSF with respect to the mosaic flat crystals. Simulations have already shown their excellent focusing capability which makes them the best candidates for a Laue lens whose sensitivity is driven by the dimension of the focused spot. Bent Germanium (perfect, 111) and Gallium Arsenide (mosaic, 220) were selected with the proper curvature to approach the spherical lens petal surface, with a 20 m long focal length. In the last part of the PhD the candidate will be involved in the measurements by which we are able to estimate the exact curvature of each tile within a few percent of uncertainty and their diffraction efficiency, and eventually He will deal with facility calibration before starting with the crystal assembling of the lens petal.</p>	
<i>Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)</i>	
PhD thesis completion	

Journals

- "The LAUE project for broadband gamma-ray focusing lenses", E. Virgilli, F. Frontera, V. Valsan, V. Liccardo. (Proc. SPIE 8147, 81471C (2011); doi:10.1117/12.895236);
- "Laue lenses for hard x-/soft gamma-rays: new prototype results", E. Virgilli, F. Frontera, V. Valsan, V. Liccardo. (Proc. SPIE 8147, 81471B (2011); doi:10.1117/12.895233);
- "Gamma-ray Laue lenses under development for deep AGN observations", F. Frontera, G. Risaliti, E. Virgilli, V. Liccardo, V. Valsan. (Journal of Physics: Conference Series 355 (2012) 012005; doi:10.1088/1742-6596/355/1/012005);
- "Characterization of bent crystals for Laue lenses", V. Liccardo, F. Frontera, E. Virgilli, V. Valsan. [SPIE Conference Series], Proc. SPIE 8443, (2012);
- "Development status of LAUE project", F. Frontera, V. Liccardo, E. Virgilli, V. Valsan, V. Carassiti, S. Chiozzi, F. Evangelisti, S. Squerzanti, M. Statera [SPIE Conference Series], Proc. SPIE 8443, (2012);
- "Expected performance of a Laue lens based on bent crystals", V. Valsan, E. Virgilli, V. Liccardo, F. Frontera. [SPIE Conference Series], Proc. SPIE 8443, (2012)

International Conferences

- "Scientific prospects in soft gamma-ray astronomy thanks to the LAUE project", F. Frontera, E. Virgilli, V. Valsan, V. Liccardo et al. Proc. SPIE Paper Number 8861-5, (2013).
- "The LAUE project and its main results", E. Virgilli, F. Frontera, V. Valsan, V. Liccardo et al. Proc. SPIE Paper Number 8861-6, (2013).
- "Results of the simulations of the petal/lens as part of the LAUE project", V. Valsan, F. Frontera, E. Virgilli, V. Liccardo Proc. SPIE Paper Number 8861-8, (2013).
- "Bent crystal selection and assembling for the LAUE project", V. Liccardo, F. Frontera, E. Virgilli, V. Valsan et al. *Proc. SPIE Paper Number 8861-9, (2013)*.
- "The LAUE project for broadband gamma-ray focusing lenses", E. Virgilli, F. Frontera, V. Valsan, V. Liccardo, E. Caroli, J.B. Stephen, F. Cassese, L. Recanatesi, M. Pecora, P. Attinà, S. Mottini, B. Negri "International Journal of Modern Physics: Conference Series World Scientific Publishing Company" in press (October 2011)
- "New developments in the Laue project"
- V. Liccardo, F. Frontera, E. Virgilli, V. Valsan et al. *Proc. MG13 Novemebr 2013*.

Talks and Presentations

- IRAP Ph.D. Erasmus Mudus School, September 6-30, 2010, Nice (France);
- 25th TEXAS Symposium on Relativistic Astrophysics, December 6-10, 2010, Heidelberg (Germany) ;
- IRAP Ph.D. Erasmus Mundus Workshop, March 21-26, 2011, Pescara (Italy);
- IRAP Ph.D. Erasmus Mundus Workshop, April 3-8, 2011, Les Houches (France) ;

- IRAP Ph.D. Erasmus Mundus School, May 23th - June 6th, 2011, Nice (France);
- SPIE Optics + Photonics Conference, August 21-25, 2011, San Diego (USA);
- IRAP Ph.D. Erasmus Mundus School, September 5-16, 2011, Nice (France);
- Second Ferrara Workshop on X-Ray Astrophysics up to 511KeV, September 14-16, 2011, Ferrara (Italy);
- Galileo-XuGuanqui Meeting, October 11-15, 2011, Beijing (China);
- IRAP Ph.D. Erasmus Mundus School, June 4-15, 2012, Nice (France);
- SPIE Astronomical Telescopes + Instrumentation 2012 Conference,
 • July 1-7, 2012, Amsterdam (Netherlands);
- The Thirteenth Marcel Grossmann Meeting - MG13, July 1-7, 2012, Stockholm (Sweden);
- IRAP Ph.D. Erasmus Mundus School, September 3-22, 2012, Nice (France);
- X-ray Astronomy: towards the next 50 years!, October 1-5, 2012, Milan (Italy);
- Training/research period (mobility) requested by the Ph.D. program IRAP at the Université de Savoie, pres “Université de Grenoble” October 15th - December 15th, 2012, Grenoble (France);
- Research period (mobility) requested by the Ph.D. program IRAP at the University of Stockholm, February 15th - July 15th, 2013, Stockholm (Sweden);
- The first URCA meeting on Relativistic AstrophysicsICRANet Rio, 24-29 June 2013, Rio de Janeiro, Brazil;
- SPIE Optics + Photonics Conference, August 25-29, 2013, San Diego (USA).

Vincenzo Liccardo Mobility:

- IRAP Ph.D. Erasmus Mudus School, September 6-30, 2010, Nice (France);
- 25th TEXAS Symposium on Relativistic Astrophysics, December 6-10, 2010, Heidelberg (Germany) ;
- IRAP Ph.D. Erasmus Mundus Workshop, March 21-26, 2011, Pescara (Italy);
- IRAP Ph.D. Erasmus Mundus Workshop, April 3-8, 2011, Les Houches (France) ;
- IRAP Ph.D. Erasmus Mundus School, May 23th - June 6th, 2011, Nice (France);
- SPIE Optics + Photonics Conference, August 21-25, 2011, San Diego (USA);
- IRAP Ph.D. Erasmus Mundus School, September 5-16, 2011, Nice (France);
- Second Ferrara Workshop on X-Ray Astrophysics up to 511KeV, September 14-16, 2011, Ferrara (Italy);
- Galileo-XuGuanqui Meeting, October 11-15, 2011, Beijing (China);
- IRAP Ph.D. Erasmus Mundus School, June 4-15, 2012, Nice (France);
- SPIE Astronomical Telescopes + Instrumentation 2012 Conference, July 1-7, 2012, Amsterdam (Netherlands);
- The Thirteenth Marcel Grossmann Meeting - MG13, July 1-7, 2012, Stockholm (Sweden);
- IRAP Ph.D. Erasmus Mundus School, September 3-22, 2012, Nice (France);
- X-ray Astronomy: towards the next 50 years!, October 1-5, 2012, Milan (Italy);
- Training/research period (mobility) requested by the Ph.D. program IRAP at the Université de Savoie, pres "Université de Grenoble" October 15th - December 15th, 2012, Grenoble (France);
- Research period (mobility) requested by the Ph.D. program IRAP at the University of Stockholm, February 15th - July 15th, 2013, Stockholm (Sweden);
- The first URCA meeting on Relativistic AstrophysicsICRANet Rio, 24-29 June 2013, Rio de Janeiro, Brazil;
- SPIE Optics + Photonics Conference, August 25-29, 2013, San Diego (USA).



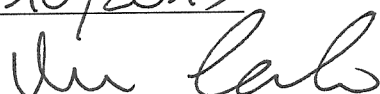
Title	Period	Duration
UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	September 6-30, 2010	1 Month
UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	May 22 – June 11, 2011	3 Weeks
UNIVERSITÉ DE SAVOIE	April 3-8, 2011	1 Week
UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	September 5-16, 2011	2 Weeks
UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	June 4 – 15, 2012	2 Weeks
UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	September 3-22, 2012	3 Weeks
UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	October 15th - December 15th, 2012	2 Months

Total : 6 Months

Title	Period	Duration
UNIVERSITY OF STOCKHOLM	February 15th - July 15th, 2013,	6 Months

Total : 12 Months

Date 12/10/2013

Signature: 

Doctoral Candidate name (first name - LAST NAME)	Enrolment date in the Joint Programme*
Sheyse MARTINS de CARVALHO	September 2010
Name and Institution of the Doctoral Candidate Supervisors*	
Jorge A. Rueda, ICRANet and Sapienza University of Rome	
Title of the EMJD research project*	
<i>Electrodynamics of Neutrons Stars</i>	
Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)	
<p><u>Summary:</u></p> <p><i>The Feynman-Metropolis-Teller treatment has been recently generalized to relativistic regimes and applied to the description of static and rotating white dwarfs in general relativity (Rotondo et al. 2011; Boshkayev et al. 2013). We extend this relativistic Feynman-Metropolis-Teller treatment to the case of finite temperatures and construct the corresponding equation of state of the system. The new equation of state takes into account self-consistently the relativistic, Coulomb, thermal effects and beta equilibrium in a wide range of densities relevant for both white dwarfs and neutron star crusts. Besides being interesting by its own, the inclusion of finite temperature effects is becoming of primary importance in view of the recent discovery of ultra low mass white dwarfs, companion of neutron stars in relativistic binaries. The effects of the finite temperatures on the macroscopic structure of white dwarfs are studied and the mass-radius relation of white dwarfs as a function of both central density and interior temperature is constructed. We apply our results to low mass white dwarfs, and analyse specifically the case of the white dwarf companion of the pulsar PSR J1738+0333.</i></p> <p><i>In a recently work of Belvedere et al. (2012), it was developed a treatment of neutron stars fulfilling global and not local charge neutrality. It was there shown that the equations of Tolman- Oppenheimer-Volkoff (TOV) (Tolman, 1939; Oppenheimer and Volkoff, 1939), traditionally used to describe the equilibrium configurations of neutron stars, have to be replaced once the weak, strong, electromagnetic and gravitational interactions are taken into account. Instead, what was called the Einstein-Maxwell-Thomas-Fermi (EMTF) system of equations has to be used. The solution of the EMTF equations leads to a new structure of the neutron star: a positively charged core at supranuclear densities, surrounded by an electronic distribution of thickness of opposite charge, as well as a neutral crust at lower densities. As they showed, the solution of this new set of equilibrium equations leads to a more compact neutron star, with a less massive and thinner crust. In the second part of this work, we study the cooling theory of neutron stars. We compute the thermal evolution of globally neutral neutron stars by integrating numerically the energy balance and transport equations in general relativity. We compare and contrast the cooling curves of these stars with the ones of locally neutral neutron stars constructed following a TOV-like approach.</i></p> <p>Mobility (2013):</p> <p>-Erasmus Mundus School – Nice, 15-30 May 2013 -Period spent in Université de Nice Sophia-Antipolis for mobility: 10 july – 18 september 2013 -2013 yearly ICRANet scientific meeting – 3-21 june 2013, Pescara, Italy (oral presentation) -1st URCA meeting on relativistic astrophysics – 24-29 june 2013, Rio de Janeiro, Brazil (oral presentation)</p>	

Main activities implemented by the doctoral candidate since the delivery of the last report

An article was submitted to the journal Physical Review C with the results of the first part of the thesis concerning the temperature effects on the equation of state and structure of white dwarfs.

We finished the computation of the cooling sequences of globally and locally neutral neutron stars. The cooling curves have been first computed considering the isothermal approximation, which does not take into account the thermal relaxation phase. Then, it has been considered the complete cooling of the star including the first stages of thermal relaxation where the core and the crust of the neutron star are thermally decoupled. We compared our results with observations.

An article has been submitted to the Journal of the Korean Physical Society with the results of our simulations within the isothermal approximation.

An article is currently under preparation and is going to be submitted to the journal Astronomy & Astrophysics, with the results of the full numerical integration of the thermal evolution equations including the thermal relaxation phase of the neutron star.

Main activities planned to be implemented during the 12 months following the submission of this report

PhD thesis completion

MOBILITY OF SHEYSE MARTINS DE CARVALHO

- Erasmus Mundus School, Nice, France: 6-30 September, 2010.
- Erasmus Mundus Workshop, Les Houches, France: 3rd- 8th April, 2011.
- Erasmus Mundus School, Nice, France: 22 May - 11 June, 2011
- Erasmus Mundus School, Nice, France: 4th - 18th September, 2011.
- Erasmus Mundus Workshop, Les Houches, France: 2nd - 8th October, 2011
- Erasmus Mundus School, Nice, France: 3rd – 21st September, 2012.
- Erasmus Mundus School, Nice, France: 15th - 30th May 2013
- UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS France: 10 July, 2013 - 13 September 2013

	Title	Period	Duration
1	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	6-30 September 2010	1 Month
2	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	3- 8 April, 2011.	1 Week
3	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	22 May - 11 June, 2011	3 Weeks
4	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	4 – 18 September, 2011	2 Weeks
5	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	2 – 8 october 2011	1 Week
6	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	3 – 21 September, 2012.	3 Weeks
7	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	15 – 30 May 2013	2 Weeks
8	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	10 July – 13 September, 2013	2 Months

Total : 6 Months

Signature : *Sheyse Martins de Carvalho.*

Journals

- On the cooling of globally neutral neutron stars. Authors: S. M. de Carvalho, J. A. Rueda and R. Ruffini. Submitted to the Journal of the Korean Physical Society.
- The relativistic Feynman-Metropolis-Teller treatment at finite temperatures. Authors: S.M. de Carvalho, M. Rotondo, Jorge A. Rueda and R. Ruffini. Submitted to the Physical Review C.
- Thermal evolution of globally and locally neutral neutron stars. Authors: R. Negreiros, S. M. de Carvalho, J. A. Rueda and R. Ruffini. To be submitted to the Astronomy & Astrophysics.

International Conferences

- The relativistic Feynman-Metropolis-Teller theory at zero and finite temperatures. Authors: Sheyse Martins de Carvalho, Jorge A. Rueda, M. Rotondo, Carlos Arguelles, Remo Ruffini. International Journal of modern physics: conference series. In: Third Galileo-Xu Guangqi Meeting, 2011.
- On the Relativistic Feynman-Metropolis-Teller Equation of state at Finite Temperatures and low densities White Dwarfs. Authors: S. Martins de Carvalho, M. Rotondo, J. Rueda and R. Ruffini. In: XIII Marcel Grossmann Meeting, 2012.

Talks and Presentations

- The Relativistic Feynman Metropolis Teller Theory at zero and finite temperatures. Third Galileo-Xu Guangqi meeting, Beijing, China, 11th-15th October, 2011. (Poster)
- Electrodynamics of Neutrons Stars. Erasmus Mundus School, Nice, France, 5th - 13th September, 2011. (oral presentation)
- On the Relativistic Feynman-Metropolis-Teller Equation of state at Finite Temperatures and low densities White Dwarfs. Marcel Grossmann meeting, Stockholm, Sweden, 1st - 7th July, 2012. (Oral presentation)
- Relativistic Feynman-Metropolis-Teller Equation of state at Finite Temperatures. Erasmus Mundus School, Nice, France, 3rd - 19th September, 2012. (Oral presentation)
- The Relativistic Feynman-Metropolis-Teller Equation of state at Finite Temperatures and low densities White Dwarfs. Erasmus Mundus School, Nice, France, 3rd - 19th September, 2012. (oral presentation)
- On the cooling of neutron stars. Current Issues on Relativistic Astrophysics - November 5-6, 2012 - Seoul (South Korea) (oral presentation)
- On the Relativistic Feynman-Metropolis-Teller treatment at Finite Temperatures and low densities White Dwarfs. Compact Stars in QCD phase diagram III- December 12-15, 2012 Guarujá, SP (Brazil) (oral presentation)
- Finite Temperature Effects in the White Dwarf Structure in General Relativity. Texas Symposium- December 16-21, 2012 - Sao Paulo (Brazil) (Poster)
- Cooling of globally neutral neutron star. Erasmus Mundus School - Nice, 15-30 May 2013 (oral presentation)
- On the cooling of globally neutral neutron stars. 1st URCA meeting on relativistic astrophysics - 24-29 June 2013, Rio de Janeiro, Brazil (oral presentation)

MOBILITY OF SHEYSE MARTINS DE CARVALHO

- Erasmus Mundus School, Nice, France: 6-30 September, 2010.
- Erasmus Mundus Workshop, Les Houches, France: 3rd- 8th April, 2011.
- Erasmus Mundus School, Nice, France: 22 May - 11 June, 2011
- Erasmus Mundus School, Nice, France: 4th - 18th September, 2011.
- Erasmus Mundus Workshop, Les Houches, France: 2nd - 8th October, 2011
- Erasmus Mundus School, Nice, France: 3rd – 21st September, 2012.
- Erasmus Mundus School, Nice, France: 15th - 30th May 2013
- UNIVERSITÉ DE NICE SOPHIA-ANTIPOLIS France: 10 July, 2013 - 13 September 2013

	Title	Period	Duration
1	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	6-30 September 2010	1 Month
2	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	3- 8 April, 2011.	1 Week
3	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	22 May - 11 June, 2011	3 Weeks
4	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	4 – 18 September, 2011	2 Weeks
5	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	2 – 8 october 2011	1 Week
6	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	3 – 21 September, 2012.	3 Weeks
7	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	15 – 30 May 2013	2 Weeks
8	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	10 July – 13 September, 2013	2 Months

Total : 6 Months

Signature : *Sheyse Martins de Carvalho.*

<i>Doctoral Candidate name (first name - LAST NAME)</i>	<i>Enrolment date in the Joint Programme*</i>
Ana PENACCHIONI	September 2010
<i>Name and Institution of the Doctoral Candidate Supervisors*</i>	
Prof. Remo Ruffini, Università Roma La Sapienza	
<i>Title of the EMJD research project</i>	
Spectral analysis of GRBs	
<i>Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)</i>	
<p>My PhD research project includes the reduction and analysis of Gamma-ray bursts (GRB) data from different satellites, such as Fermi or Swift. I interpret the results within a theoretical scenario and try to infer the properties of the progenitors. I also use different phenomenological methods to infer their redshifts making use of cosmology. Currently I am working with a sample of GRBs, analyzing their late X-ray afterglow to seek for the existence of two different classes. This will allow us to understand better the progenitor system and the underlying physics.</p>	
<i>Main activities implemented by the doctoral candidate since the delivery of the last report</i>	
<ul style="list-style-type: none"> • <i>Mobility</i> 	
<i>Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)</i>	
<p>- <i>PhD Thesis Discussion</i></p>	

Journals

- A.V. Penacchioni, R. Ruffini, L. Izzo, M. Muccino, C.L. Bianco, L. Caito, B. Patricelli, L. Amati; “Evidence for a proto-black hole and a double astrophysical component in GRB 101023”; *Astronomy & Astrophysics*, 538, A58 (2012). <<http://adsabs.harvard.edu/abs/2012A%26A...538A..58P>><<http://dx.doi.org/10.1051/0004-6361/201118403>>
- Izzo, L.; Ruffini, R.; Penacchioni, A. V.; Bianco, C. L.; Caito, L.; Chakrabarti, S. K.; Rueda, J. A.; Nandi, A.; Patricelli, B., “A double component in GRB 090618: a proto-black hole and a genuinely long gamma-ray burst”, 2012b, *A&A*, 543, A10
- Izzo, L.; Ruffini, R.; Bianco, C. L.; Dereli, H.; Muccino, M.; Penacchioni, A. V.; Pisani, G.; Rueda, Jorge A., “On the thermal and double episode emissions in GRB 970828”, 2012a, *ApJ*, submitted (arXiv:1205.6651)
- Muccino, Marco; Ruffini, Remo; Bianco, Carlo Luciano; Izzo, Luca; Penacchioni, Ana Virginia, “GRB 090227B: the missing link between the genuine short and disguised short GRBs”, 2012, *ApJ*, 763, 125M
- A.V. Penacchioni, R. Ruffini, C.L. Bianco, L. Izzo, M. Muccino, G.B. Pisani, J. A. Rueda, “GRB 110709B in the induced gravitational collapse (IGC) paradigm”, 2013, *A&A*, 551, A133
- G.B. Pisani, L. Izzo, R. Ruffini, C.L. Bianco, M. Muccino, A.V. Penacchioni, J. A. Rueda, Y. Wang, “On a novel distance indicator for Gamma-Ray Bursts associated with Supernovae”, 2013, submitted to *A&A Letters*.

International Conferences

- “GRB 090618: a possible case of multiple GRB?” Authors: R. Ruffini, L. Izzo, A.V. Penacchioni, C.L. Bianco, L. Caito, S.K. Chakrabarti, A. Nandi "Proceedings of the 25th Texas Symposium on Relativistic Astrophysics. December 6-10, 2010. Heidelberg, Germany. Editors: Frank M. Rieger (Chair), Christopher van Eldik and Werner Hofmann. Published online at <http://pos.sissa.it/cgi-bin/reader/conf.cgi?confid=123>, id.101"
- “The proto-black hole concept in GRB 101023 and its possible extension to GRB 110709B”. Authors: A.V. Penacchioni, G.B. Pisani, R. Ruffini, C.L. Bianco, L. Izzo, M. Muccino Proceedings of the Gamma-Ray Bursts 2012 Conference (GRB 2012). May 7-11, 2012. Munich, Germany. Published online at <http://pos.sissa.it/cgi-bin/reader/conf.cgi?confid=152>, id.42
- “Evidences for a double component in GRB 101023” Authors: A. V. Penacchioni, R. Ruffini, L. Izzo, M. Muccino, B. Patricelli, C.L. Bianco, L. Caito “2011 Fermi Symposium proceedings - eConf C110509, Roma, May. 9-12, 2012”
- “A double component in the prompt emission of GRB 090618” Authors: L. Izzo, R. Ruffini, A. V. Penacchioni, C.L. Bianco, M. Muccino, L. Caito, B. Patricelli, S.K. Chakrabarti, A. Nandi “2011 Fermi Symposium proceedings - eConf C110509, Roma, May. 9-12, 2012”
- “Needs for a new GRB classification following the fireshell model: "genuine short", "disguised short" and "long" GRBs” Authors: C.L. Bianco, M.G. Bernardini, L. Caito, G. De Barros, L. Izzo, M. Muccino, B. Patricelli, A.V. Penacchioni, G. B. Pisani, R. Ruffini “Proceedings of the Gamma-Ray Bursts 2012 Conference (GRB 2012). May 7-

11, 2012. Munich, Germany. Published online at <http://pos.sissa.it/cgi-bin/reader/conf.cgi?confid=152, id.43>

Talks and Presentations

- Attendance to the “Erasmus Mundus School”, Nice, France, 6th – 24th September, 2010.
- Attendance to the 25th Symposium of Relativistic Astrophysics “Texas 2010”, Heidelberg, Germany, December 6th -10th, 2010. Poster presentation Title: A double component in the emission of GRB 090618 Authors: L. Izzo, R. Ruffini, A.V. Penacchioni, C.L. Bianco, L. Caito.
- Attendance to the IRAP PhD. Erasmus Mundus Workshop, “Recent News from the MeV, GeV and TeV Gamma-Ray Domains”, 21st – 26th March, Pescara, Italy. Oral Presentation: The case of multiple GRBs
- Attendance to the IRAP PhD. Erasmus Mundus Workshop, “From Nuclei to White Dwarfs and Neutron Stars”, Les Houches, France, 3rd - 8th April, 2011.
- Attendance to the “Fermi Symposium”, Rome, Italy, 9th- 12th May, 2011. Poster presentation: Title: “Evidences for a double component in GRB 101023” Authors: A. V. Penacchioni, R. Ruffini, L. Izzo, M. Muccino, B. Patricelli, C.L. Bianco, L. Caito
- Attendance to the meeting “GRBs as probes: from the progenitor’s environment to the high redshift universe”, Como, Italy, 16th-20th May, 2011. Poster presentation Title: Evidences of a double component in GRB 101023 Authors: A.V. Penacchioni, R. Ruffini, L. Izzo, M. Muccino, C.L. Bianco, L. Caito, B. Patricelli
- Attendance to the “Erasmus Mundus School”, Nice, France, 25th May – 10th June, 2011.
- Attendance to the international meeting “High Energy Phenomena in Relativistic Outflows III” (HEPRO III). Barcelona, 27th June- 1st July, 2011. Poster presentation Title: Evidences for a double component in GRB 101023 Authors: A. V. Penacchioni; R. Ruffini; L. Izzo; C. L. Bianco; L. Caito; M. Muccino; B. Patricelli
- Attendance to the “Erasmus Mundus School”, Nice, France, 5th - 13th September, 2011.
- Attendance to the “Second Ferrara Workshop on X-Ray astrophysics up to 511keV”, Ferrara, Italy, 14th-16th September, 2011.
- Attendance to the “IRAP PhD. “Erasmus Mundus Workshop”, Les Houches, France, 2nd - 6th October, 2011.
- Attendance to the “Third Galileo-Xu Guangqi” meeting, Beijing, China, 11th - 15th October, 2011. Oral presentation: evidences for a double component in GRB 101023.
- Attendance to the “Fermi/Swift GRB 2012 Conference”, Munich, Germany, 7th – 11th May, 2012. Poster presentation:
- The proto-black hole concept in GRB 101023 and its possible extension to GRB

110709B. Authors: A.V. Penacchioni, R. Ruffini, C.L. Bianco, L. Izzo, M. Muccino, G.B. Pisani Erasmus Mundus Joint Doctorate IRAP PhD. Student, Dip. di Fisica, Sapienza Università di Roma.

- “Needs for a new GRB classification following the fireshell model: "genuine short", "disguised short" and "long" GRBs” Authors: C.L. Bianco, M.G. Bernardini, L. Caito, G. De Barros, L. Izzo, M. Muccino, B. Patricelli, A.V. Penacchioni, G. B. Pisani, R. Ruffini
- Attendance to the “Marcel Grossmann” meeting, Stockholm, 1st - 7th July, 2012. Oral presentation: GRB 111228 and its SN association.
- Attendance to the “Erasmus Mundus School”, Nice, France, 3rd – 19th September, 2012.
- Attendance to the III National Congress “Lampi su Napoli”, Naples, 20th -22nd September, 2012. Oral presentation: GRB 110709B, a new member of the proto-black hole family.
- Attendance to the symposium “The Current Issues on Relativistic Astrophysics”, 5th-6th October, 2012, Seoul, South Korea. Oral presentation: On the Induced Gravitational Collapse: Current analysis and application to GRBs.
- Attendance to the 26th Texas Symposium on Relativistic Astrophysics, 15th -20th December, 2012, Sao Paulo, Brazil. Oral presentation: Recent progress o the induced gravitational collapse model

MOBILITY OF ANA VIRGINIA PENACCHIONI

- Erasmus Mundus School, Nice, France: 6-30 September, 2010.
- Erasmus Mundus Workshop, Les Houches, France: 3rd- 8th April, 2011.
- Erasmus Mundus School, Nice, France: 22 May - 11 June, 2011
- Erasmus Mundus School, Nice, France: 1st - 30th September, 2011.
- Erasmus Mundus Workshop, Les Houches, France: 2nd - 8th October, 2011.
- Erasmus Mundus School, Nice, France: 3rd – 28st September, 2012.
- Erasmus Mundus School, Nice, France: 15 -30 May, 2013
- Erasmus Mundus School, Nice, France: 10 July – 13th September, 2013.

	Title	Period	Duration
1	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	6-30 September 2010	1 Month
2	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	3rd- 8th April, 2011.	1 Week
3	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	22 May - 11 June, 2011	3 Weeks
4	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	1 st – 30 th September, 2011	2 Weeks
5	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	2nd – 8th October, 2011	1 Week
6	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	3 rd – 28 th September, 2012.	3 Weeks
7	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	15-30 May, 2013	2 Weeks
8	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	10 th July– 13 th September, 2013.	2 Months

Total : 6 Months

Signature :

*Penacchioni,
Ana Virginia.*

<i>Doctoral Candidate name (first name - LAST NAME)</i>	<i>Enrolment date in the Joint Programme*</i>
Vineeth VALSAN	September 2010
<i>Name and Institution of the Doctoral Candidate Supervisors*</i>	
Prof. Filippo Frontera, University of Ferrara, Italy	
<i>Title of the EMJD research project*</i>	
Extending the band of focusing X-ray telescopes beyond 100 keV: motivations and proposed solutions	
<i>Short summary of the EMJD research project* (the summary must include the mandatory mobility elements as well as the taught/training components and the main milestones for the doctoral candidate supervision and/or research deliverables)</i>	
<p>The main goal of the thesis is the study of a broad band (1-600 keV) multi-optics focusing telescope configuration for unprecedented observations of Galactic and extragalactic objects. Motivated by the astrophysical importance of extending the focusing band beyond 100 keV, with the support of the Italian Space Agency, the development of a broad band (70/100 -600 keV) Laue Lens is being performed in Italy, under the scientific PI-ship of Filippo Frontera, at the Physics Department of the University of Ferrara. I am involved in this project, with the goal of developing a code that simulates a Laue lens made of curved crystals, like that foreseen to be developed. With this code I have, first, established the best crystal and lens parameters of the lens prototype we want to build. The lens petal structure was also modelled, optimising the energy band from 90-300 keV, which will focus the photons to a focal distance of 20 meters. This code is extended for the entire lens with an energy range from 90-600 keV. The effective area, continuum as well as emission line sensitivity was is also simulated.</p>	
<i>Main activities implemented by the doctoral candidate since the delivery of the last report</i>	
<p>I have performed the simulation of the lens with an energy range from 90-100 keV. The effective area, the sensitivity (both continuum as well as emission line sensitivity), and the on-axis PSF of the lens is also modelled. The scientific aspects that can be explored using the Laue lens is also deeply studied. The results were presented at the SPIE Optics + Photonics conference held in San Diego in August 2013.</p>	
s	
<i>Main activities planned to be implemented during the 12 months following the submission of this report(not applicable to graduated candidates)</i>	
PhD thesis completion	

Journals

- "The LAUE project for broadband gamma-ray focusing lenses", E. Virgilli, F. Frontera, V. Valsan, V. Liccardo. (Proc. SPIE 8147, 81471C (2011); doi:10.1117/12.895236);
- "Laue lenses for hard x-/soft gamma-rays: new prototype results", E. Virgilli, F. Frontera, V. Valsan, V. Liccardo. (Proc. SPIE 8147, 81471B (2011); doi:10.1117/12.895233);
- "Gamma-ray Laue lenses under development for deep AGN observations", F. Frontera, G. Risaliti, E. Virgilli, V. Liccardo, V. Valsan. (Journal of Physics: Conference Series 355 (2012) 012005; doi:10.1088/1742-6596/355/1/012005);
- "Characterization of bent crystals for Laue lenses", V. Liccardo, F. Frontera, E. Virgilli, V. Valsan. [SPIE Conference Series], Proc. SPIE 8443, (2012);
- "Development status of LAUE project", F. Frontera, V. Liccardo, E. Virgilli, V. Valsan, V. Carassiti, S. Chiozzi, F. Evangelisti, S. Squerzanti, M. Statera [SPIE Conference Series], Proc. SPIE 8443, (2012);

International Conferences

- "Expected performance of a Laue lens based on bent crystals", V. Valsan, E. Virgilli, V. Liccardo, F. Frontera. [SPIE Conference Series], Proc. SPIE 8443, (2012)
- "Scientific prospects in soft gamma-ray astronomy thanks to the LAUE project," F. Frontera, E. Virgilli, V. Valsan, V. Liccardo et al. Proc. SPIE Paper Number 8861-5, (2013).
- "The LAUE project and its main results," E. Virgilli, F. Frontera, V. Valsan, V. Liccardo et. al. Proc. SPIE Paper Number 8861-6, (2013).
- "Results of the simulations of the petal/lens as part of the LAUE project "V. Valsan, F. Frontera, E. Virgilli, V. Liccardo Proc. SPIE Paper Number 8861-8, (2013).
- "Bent crystal selection and assembling for the LAUE project," V. Liccardo, F. Frontera, E. Virgilli, V. Valsan et. al. *Proc. SPIE Paper Number 8861-9, (2013).*

Talks and Presentations

Erasmus Mundus School, Nice, France: 6-30 September, 2010.

Erasmus Mundus Workshop, Les Houches, France: 3rd- 8th April, 2011.

Erasmus Mundus School, Nice, France: 22 May - 11 June, 2011

Erasmus Mundus School, Nice, France: 5th - 16th September, 2011.

Erasmus Mundus School, Nice, France: 3rd – 21st September, 2012.

Université de Savoie - PRES "Universite de Grenoble, France: 15 Oct, 2012 - 30 Nov 2012

Université De Savoie - PRES "Universite de Grenoble, France: 15 May, 2013 - 30 June 2013


MOBILITY OF VINEETH VALSAN

- Erasmus Mundus School, Nice, France: 6-30 September, 2010.
- Erasmus Mundus Workshop, Les Houches, France: 3rd- 8th April, 2011.
- Erasmus Mundus School, Nice, France: 22 May - 11 June, 2011
- Erasmus Mundus School, Nice, France: 5th - 16th September, 2011.
- Erasmus Mundus School, Nice, France: 3rd – 21st September, 2012.
- UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE" France: 15 Oct, 2012 - 30 Nov 2012
- UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE", France: 15 May, 2013 - 30 June 2013

	Title	Period	Duration
1	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	6-30 September 2010	1 Month
2	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	3rd- 8th April, 2011.	1 Week
3	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	22 May - 11 June, 2011	2 Weeks
4	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	5 th – 16 th September, 2011	2 Weeks
5	UNIVERSITÉ DE NICE –SOPHIA ANTIPOLIS	3 rd – 21 st September, 2012.	3 Weeks
6	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	15 Oct, 2012 - 30 Nov 2012	1.5 Months
7	UNIVERSITÉ DE SAVOIE - PRES "UNIVERSITE DE GRENOBLE"	15 May, 2013 - 30 June 2013	1.5 Months

Total : 6 Months

Signature :


 12/OCT./2013.

PART C: EM MOBILITY DATABASE PRINT-OUTS

The doctorate fellowship candidates' data extracted from the "Erasmus Mundus Mobility Database" must contain the information required (e.g. mobility tracks, amounts received etc) of all candidates enrolled in the edition of the Joint Doctorate covered by this Final Report. The financial information in the mobility database must be consistent with the information indicated in PART E of this report

In case that the project requests the payment of the further pre-financing the mobility database must include all the necessary and updated financial information concerning payments of the Doctoral Candidates. The form/s must be signed by the project co-ordinator. The financial information in the mobility database must be consistent with the information indicated in PART D of this report.

NEW: EACEA Mobility Tool – User Manual Action 1 & 2

<http://iis-cfprod.eacea.cec.eu.int/mobility/docs/EACEA-Mobility-database-guidelines-EM.pdf>

Scholarship holders' data

(output retrieved from the home page of the course edition concerned)

The screenshot shows the EACEA Mobility Tool interface in a Windows Internet Explorer browser. The page displays a table of Doctoral Candidates with columns for Category, Default quota, Specific Quota, Persons/Qta, and Add to a list. Below the table is a navigation bar with buttons for 'Lock and Submit', 'Progress report', 'Final report', and 'UnLock'. The 'Progress report' and 'Final report' buttons are circled in red, and arrows point from the text below to these buttons.

Category	Default quota	Specific Quota	Persons/Qta	Add to a list
Category A	5	<input type="text" value="5"/>	0 / 5	Add to selected category
Category B	3	<input type="text" value="3"/>	0 / 3	Add to selected category
Western Balkans and Turkey Window	1	<input type="text" value="1"/>	0 / 1	Add to selected category

Buttons: Lock and Submit, Progress report, Final report, UnLock

To be used for the **2nd Pre-Financing request and/or Final Report**

Report: Final report

Agreement number: 2010-0011
 Project name: International Relativistic Astrophysics Doctorate Program
 Project Edition: 2010
 Activity code: EIMJDMOB

DOCTORAL CANDIDATES

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution / University	Country	Mobility Start Date	Mobility End Date	Title of the research Project/Thesis	Gross monthly salary	Net monthly salary	Amount received	Graduation Date	Name of the Degree(s) Obtained
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	06-09-2010	30-09-2010	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	Italy	INTERNATIONAL L CENTER FOR RELATIVISTI	Italy	01-10-2010	13-10-2010	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	14-10-2010	11-12-2010	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	Italy	INTERNATIONAL L CENTER FOR RELATIVISTI	Italy	12-12-2010	18-12-2010	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	19-12-2010	19-03-2011	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	Italy	INTERNATIONAL L CENTER FOR RELATIVISTI	Italy	20-03-2011	27-03-2011	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	28-03-2011	21-05-2011	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	22-05-2011	11-06-2011	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	12-06-2011	03-09-2011	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	04-09-2011	18-09-2011	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	19-09-2011	14-05-2012	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARCH NU CLEAR UNIV	Italy	UNIVERSITA D I FERRARA	Italy	15-05-2012	15-06-2012	Pair Instability Supernovae an d Gamma-Ray Bur	1950	1591			

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	129900.00	10-09-2013	Ph.D. in Physics and Relativistic Astrophysics
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	16-06-2012	30-06-2012	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	Sweden	STOCKHOLM UN IVERSITY	Sweden	01-07-2012	08-07-2012	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	09-07-2012	31-07-2012	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	01-08-2012	31-08-2012	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	01-09-2012	22-09-2012	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	23-09-2012	22-10-2012	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	Italy	UNIVERSITÁ D I FERRARA	Italy	23-10-2012	10-11-2012	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	11-11-2012	08-03-2013	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	Italy	UNIVERSITÁ D I FERRARA	Italy	09-03-2013	16-03-2013	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	17-03-2013	15-05-2013	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	16-05-2013	31-05-2013	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	01-06-2013	02-06-2013	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	03-06-2013	28-07-2013	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
BARANOV	ANDREY	M	Russian	NATIONAL R ESEARH NU CLEAR UNIV	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	29-07-2013	30-09-2013	Pair Instabilit y Supernovae an d Gamma-Ray Bur	1950	1591
Total for BARANOV, ANDREY : 26												
DUTTA	PARIKSHI T	M	Indian	INDIAN INS TITUTE OF TECHNOLOGY	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	06-09-2010	30-09-2010	DeWitt Equation in Quantum Fie ld Theory and i	1950	1591
DUTTA	PARIKSHI T	M	Indian	INDIAN INS TITUTE OF TECHNOLOGY	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	01-10-2010	13-10-2010	DeWitt Equation in Quantum Fie ld Theory and i	1950	1591
DUTTA	PARIKSHI T	M	Indian	INDIAN INS TITUTE OF TECHNOLOGY	Germany	AEI - POTSDA M	Germany	14-10-2010	20-03-2011	DeWitt Equation in Quantum Fie ld Theory and i	1950	1591

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	Field	Year	Year	Year	Ph.D. in
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	India	INTERNATIONAL CENTER FOR RELATIVIST	Italy	21-03-2011	27-03-2011	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Germany	AEI - POTSDAM	Germany	28-03-2011	02-04-2011	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ D E SAVOIE - PRES "UNIVERS	France	03-04-2011	09-04-2011	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Germany	AEI - POTSDAM	Germany	10-04-2011	21-05-2011	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ D E NICE - SOPHIA ANTIPOLI	France	22-05-2011	11-06-2011	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Germany	AEI - POTSDAM	Germany	12-06-2011	03-09-2011	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ D E NICE - SOPHIA ANTIPOLI	France	04-09-2011	18-09-2011	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Germany	AEI - POTSDAM	Germany	19-09-2011	09-05-2012	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ D E NICE - SOPHIA ANTIPOLI	France	10-05-2012	31-05-2012	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Sweden	STOCKHOLM UNIVERSITY	Sweden	01-07-2012	08-07-2012	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Germany	AEI - POTSDAM	Germany	09-07-2012	31-08-2012	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ D E NICE - SOPHIA ANTIPOLI	France	01-09-2012	22-09-2012	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Germany	AEI - POTSDAM	Germany	23-09-2012	30-03-2013	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ D E SAVOIE - PRES "UNIVERS	France	31-03-2013	31-05-2013	DeWitt Equation in Quantum Field Theory and i	1950	1591		
DUTTA	PARIKSHI T	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Germany	AEI - POTSDAM	Germany	01-06-2013	30-09-2013	DeWitt Equation in Quantum Field Theory and i	1950	1591		
Total for DUTTA, PARIKSHIT : 18														Ph.D. in Physics and Relativistic Astrophysics
														129900.00
														10-12-2013
MACHADO DE OLIVEIRA FRAGA	BERNARDO	M	Brazilian	CENTRO BRASILEIRO DE PESQUISAS	France	UNIVERSITÉ D E NICE - SOPHIA ANTIPOLI	France	15-09-2010	30-09-2010	A semi degenerate system of Fermions as dark	1950	1591		
MACHADO DE OLIVEIRA FRAGA	BERNARDO	M	Brazilian	CENTRO BRASILEIRO DE PESQUISAS	Italy	INTERNATIONAL CENTER FOR RELATIVIST	Italy	01-10-2010	13-10-2010	A semi degenerate system of Fermions as dark	1950	1591		

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	Host institution/ University	Country	Mobility Start Date	Mobility End Date
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	SAPIENZA - U NIVERSITÀ DI ROMA	Italy	14-10-2010	20-03-2011	A semi degenera te system of Fe rmions as dark	Italy	14-10-2010	20-03-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	21-03-2011	27-03-2011	A semi degenera te system of Fe rmions as dark	Italy	21-03-2011	27-03-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	SAPIENZA - U NIVERSITÀ DI ROMA	Italy	28-03-2011	02-04-2011	A semi degenera te system of Fe rmions as dark	Italy	28-03-2011	02-04-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	03-04-2011	09-04-2011	A semi degenera te system of Fe rmions as dark	France	03-04-2011	09-04-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	SAPIENZA - U NIVERSITÀ DI ROMA	Italy	10-04-2011	21-05-2011	A semi degenera te system of Fe rmions as dark	Italy	10-04-2011	21-05-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	22-05-2011	11-06-2011	A semi degenera te system of Fe rmions as dark	France	22-05-2011	11-06-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	12-06-2011	03-09-2011	A semi degenera te system of Fe rmions as dark	Italy	12-06-2011	03-09-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	04-09-2011	18-09-2011	A semi degenera te system of Fe rmions as dark	France	04-09-2011	18-09-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	19-09-2011	01-10-2011	A semi degenera te system of Fe rmions as dark	Italy	19-09-2011	01-10-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	02-10-2011	08-10-2011	A semi degenera te system of Fe rmions as dark	France	02-10-2011	08-10-2011
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	09-10-2011	30-06-2012	A semi degenera te system of Fe rmions as dark	Italy	09-10-2011	30-06-2012
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Sweden	STOCKHOLM UN IVERSTY	Sweden	01-07-2012	08-07-2012	A semi degenera te system of Fe rmions as dark	Sweden	01-07-2012	08-07-2012
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	09-07-2012	31-08-2012	A semi degenera te system of Fe rmions as dark	Italy	09-07-2012	31-08-2012
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	01-09-2012	22-09-2012	A semi degenera te system of Fe rmions as dark	France	01-09-2012	22-09-2012
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	23-09-2012	30-04-2013	A semi degenera te system of Fe rmions as dark	Italy	23-09-2012	30-04-2013
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	01-05-2013	14-05-2013	A semi degenera te system of Fe rmions as dark	Italy	01-05-2013	14-05-2013
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	15-05-2013	30-05-2013	A semi degenera te system of Fe rmions as dark	France	15-05-2013	30-05-2013
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	Italy	INTERNATIONA L CENTER FOR RELATIVISTI	Italy	31-05-2013	09-07-2013	A semi degenera te system of Fe rmions as dark	Italy	31-05-2013	09-07-2013
MACHADO D E OLIVEIR A FRAGA	BERNARDO M	Brazilian	Brazilian	CENTRO BRA SILEIRO DE PESQUISAS	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	10-07-2013	13-09-2013	A semi degenera te system of Fe rmions as dark	France	10-07-2013	13-09-2013

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	1591	1590	129900.00	29-11-2013	Ph.D. in Physics and Relativistic Astrophysics
MACHADO DE OLIVEIRA A FRAGA	BERNARDO	M	Brazilian	CENTRO BRASILEIRO DE PESQUISAS	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	14-09-2013	30-09-2013	A semi degenerate system of Fermions as dark	1591			
Total for MACHADO DE OLIVEIRA FRAGA, BERNARDO : 22														
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	France	UNIVERSITÉ D'ORLÈANS - SOPHIA ANTIPOLI	France	06-09-2010	30-09-2010	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	01-10-2010	13-10-2010	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	14-10-2010	20-03-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	21-03-2011	27-03-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	28-03-2011	02-04-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	France	UNIVERSITÉ D'ORLÈANS - SAVOIE - PARS "UNIVERSITÉS"	France	03-04-2011	08-04-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	09-04-2011	21-05-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	France	UNIVERSITÉ D'ORLÈANS - SOPHIA ANTIPOLI	France	22-05-2011	11-06-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	12-06-2011	03-09-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	France	UNIVERSITÉ D'ORLÈANS - SOPHIA ANTIPOLI	France	04-09-2011	18-09-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	19-09-2011	01-10-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	France	UNIVERSITÉ D'ORLÈANS - SAVOIE - PARS "UNIVERSITÉS"	France	02-10-2011	08-10-2011	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	09-10-2011	30-06-2012	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Sweden	STOCKHOLM UNIVERSITY	Sweden	01-07-2012	08-07-2012	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	09-07-2012	02-09-2012	Electrodynamics of Neutron Stars	1591	1590		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	ISTITUTO TECNOLÓGICO DE AERONAUTICA	France	UNIVERSITÉ D'ORLÈANS - SOPHIA ANTIPOLI	France	03-09-2012	21-09-2012	Electrodynamics of Neutron Stars	1591	1590		

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	Project Title	Year	Year	Year	Ph.D. in Physics and Relativistic Astrophysics
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	INSTITUTO TECNOLÓGICO DE AERONA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	22-09-2012	14-05-2013	Electrodynamics of Neutron Stars	1950	1591		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	INSTITUTO TECNOLÓGICO DE AERONA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	15-05-2013	30-05-2013	Electrodynamics of Neutron Stars	1950	1591		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	INSTITUTO TECNOLÓGICO DE AERONA	Italy	INTERNATIONAL CENTER FOR RELATIVIST	Italy	31-05-2013	09-07-2013	Electrodynamics of Neutron Stars	1950	1591		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	INSTITUTO TECNOLÓGICO DE AERONA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	10-07-2013	13-09-2013	Electrodynamics of Neutron Stars	1950	1591		
MARTINS DE CARVALHO	SHEYSE	F	Brazilian	INSTITUTO TECNOLÓGICO DE AERONA	Italy	INTERNATIONAL CENTER FOR RELATIVIST	Italy	14-09-2013	30-09-2013	Electrodynamics of Neutron Stars	1950	1591		
Total for MARTINS DE CARVALHO, SHEYSE : 21														
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	06-09-2010	30-09-2010	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	INTERNATIONAL CENTER FOR RELATIVIST	Italy	01-10-2010	13-10-2010	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	14-10-2010	20-03-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	INTERNATIONAL CENTER FOR RELATIVIST	Italy	21-03-2011	27-03-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	28-03-2011	02-04-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	France	UNIVERSITÉ DE SAVOIE - PRES "UNIVERS	France	03-04-2011	08-04-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	09-04-2011	21-05-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	22-05-2011	11-06-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	12-06-2011	03-09-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	04-09-2011	18-09-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	19-09-2011	01-10-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		
PENACCHIO NI	ANA VIRGINIA	F	Argentinian	UNIVERSITY OF LA PLATA	France	UNIVERSITÉ DE SAVOIE - PRES "UNIVERS	France	02-10-2011	08-10-2011	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591		

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	129900.00	25-09-2013	Ph.D. in Physics and Relativistic Astrophysics
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	09-10-2011	30-06-2012	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	Sweden	STOCKHOLM UNIVERSITY	Sweden	01-07-2012	08-07-2012	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	09-07-2012	02-09-2012	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	03-09-2012	28-09-2012	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	29-09-2012	14-05-2013	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	15-05-2013	30-05-2013	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	INTERNATIONAL CENTER FOR RELATIVISTIC PHYSICS	Italy	31-05-2013	09-07-2013	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	10-07-2013	13-09-2013	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
PENACCHIO NI	ANA VIRG INIA	F	Argentinian	UNIVERSITY OF LA PLATA	Italy	INTERNATIONAL CENTER FOR RELATIVISTIC PHYSICS	Italy	14-09-2013	25-09-2013	Multiwavelength analysis of Gamma-Ray Bursts	1950	1591
Total for PENACCHIONI, ANA VIRGINIA : 21												
VALSAN	VINEETH	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	06-09-2010	30-09-2010	Extending the band of focusin g X-ray telesco	1950	1591
VALSAN	VINEETH	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Italy	INTERNATIONAL CENTER FOR RELATIVISTIC PHYSICS	Italy	01-10-2010	13-10-2010	Extending the band of focusin g X-ray telesco	1950	1591
VALSAN	VINEETH	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Italy	UNIVERSITÀ DI FERRARA	Italy	14-10-2010	20-03-2011	Extending the band of focusin g X-ray telesco	1950	1591
VALSAN	VINEETH	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Italy	INTERNATIONAL CENTER FOR RELATIVISTIC PHYSICS	Italy	21-03-2011	27-03-2011	Extending the band of focusin g X-ray telesco	1950	1591
VALSAN	VINEETH	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Italy	UNIVERSITÀ DI FERRARA	Italy	28-03-2011	02-04-2011	Extending the band of focusin g X-ray telesco	1950	1591
VALSAN	VINEETH	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ DE SAVOIE - PARSYVAL	France	03-04-2011	08-04-2011	Extending the band of focusin g X-ray telesco	1950	1591
VALSAN	VINEETH	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	Italy	UNIVERSITÀ DI FERRARA	Italy	09-04-2011	21-05-2011	Extending the band of focusin g X-ray telesco	1950	1591
VALSAN	VINEETH	M	Indian	INDIAN INSTITUTE OF TECHNOLOGY	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	22-05-2011	11-06-2011	Extending the band of focusin g X-ray telesco	1950	1591

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	129900.00	29-11-2013	Ph.D. in Physics and Relativistic Astrophysics	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	Italy	UNIVERSITA D I FERRARA	Italy	12-06-2011	03-09-2011	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	04-09-2011	18-09-2011	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	Italy	UNIVERSITA D I FERRARA	Italy	19-09-2011	01-10-2011	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	02-10-2011	08-10-2011	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	Italy	UNIVERSITA D I FERRARA	Italy	09-10-2011	30-06-2012	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	Sweden	STOCKHOLM UN IVERSITY	Sweden	01-07-2012	08-07-2012	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	Italy	UNIVERSITA D I FERRARA	Italy	09-07-2012	02-09-2012	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	03-09-2012	21-09-2012	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	Italy	UNIVERSITA D I FERRARA	Italy	23-09-2012	14-10-2012	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	15-10-2012	30-11-2012	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	Italy	UNIVERSITA D I FERRARA	Italy	01-12-2012	14-05-2013	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS	France	15-05-2013	30-06-2013	Extending the b and of focusin g X-ray telesco	1950	1591	
VALSAN	VINEETH	M	Indian	INDIAN INS TITUTE OF ASTROPHYSI	Italy	UNIVERSITA D I FERRARA	Italy	01-07-2013	30-09-2013	Extending the b and of focusin g X-ray telesco	1950	1591	
Total for VALSAN, VINEETH : 21											129900.00	29-11-2013	Ph.D. in Physics and Relativistic Astrophysics

Total for Category A: 129 mobilities by 6 Doctoral Candidates

Doctoral Candidates - Category B

ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	06-09-2010	30-09-2010	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	01-10-2010	13-10-2010	Kinetic approach to pair production in strong	1950	1591

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	1950	1591	
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	14-10-2010	20-03-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	21-03-2011	27-03-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	28-03-2011	02-04-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	France	UNIVERSITÉ DE SAVOIE - PRES "UNIVERS	France	03-04-2011	09-04-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	10-04-2011	17-04-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	18-04-2011	21-05-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	22-05-2011	11-06-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	12-06-2011	03-07-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	04-07-2011	09-07-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	10-07-2011	03-09-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	04-09-2011	18-09-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	19-09-2011	01-10-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	France	UNIVERSITÉ DE SAVOIE - PRES "UNIVERS	France	02-10-2011	08-10-2011	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	09-10-2011	17-04-2012	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Sweden	STOCKHOLM UNIVERSITY	Sweden	18-04-2012	12-07-2012	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	13-07-2012	02-09-2012	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	France	UNIVERSITÉ DE NICE - SOPHIA ANTIPOLI	France	03-09-2012	28-09-2012	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	SAPIENZA - UNIVERSITÀ DI ROMA	Italy	29-09-2012	02-02-2013	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Sweden	STOCKHOLM UNIVERSITY	Sweden	03-02-2013	28-04-2013	Kinetic approach to pair production in strong	1950	1591
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	29-04-2013	14-05-2013	Kinetic approach to pair production in strong	1950	1591

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	14-11-2013	125400.00	Ph.D. in Physics and Relativistic Astrophysics
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	France	UNIVERSITE D ENICE - SOP HIA ANTIPOLI	France	15-05-2013	31-05-2013	1950	1591	Kinetic approach to pair production in strong
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	01-06-2013	09-07-2013	1950	1591	Kinetic approach to pair production in strong
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	France	UNIVERSITE D ENICE - SOP HIA ANTIPOLI	France	10-07-2013	13-09-2013	1950	1591	Kinetic approach to pair production in strong
ALBERTO	BENEDETTI	M	Italian	UNIVERSITY OF PAVIA	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	14-09-2013	30-09-2013	1950	1591	Kinetic approach to pair production in strong
Total for ALBERTO, BENEDETTI : 26												
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	France	UNIVERSITE D ENICE - SOP HIA ANTIPOLI	France	06-09-2010	30-09-2010	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	Germany	AEI - POTSDAM	Germany	01-10-2010	20-03-2011	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	21-03-2011	27-03-2011	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	Germany	AEI - POTSDAM	Germany	28-03-2011	21-05-2011	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	France	UNIVERSITE D ENICE - SOP HIA ANTIPOLI	France	22-05-2011	11-06-2011	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	Germany	AEI - POTSDAM	Germany	12-06-2011	03-09-2011	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	France	UNIVERSITE D ENICE - SOP HIA ANTIPOLI	France	04-09-2011	23-09-2011	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	Germany	AEI - POTSDAM	Germany	24-09-2011	14-05-2012	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	France	UNIVERSITE D ENICE - SOP HIA ANTIPOLI	France	15-05-2012	15-06-2012	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	Germany	AEI - POTSDAM	Germany	16-06-2012	30-06-2012	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	Sweden	STOCKHOLM UNIVERSITY	Sweden	01-07-2012	08-07-2012	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	France	UNIVERSITE D ENICE - SOP HIA ANTIPOLI	France	09-07-2012	11-09-2012	1950	1591	Quantum Gravity and Automorphic Functions
FLEIG	PHILIPP	M	German	IMPERIAL COLLEGE DON	France	UNIVERSITE D ENICE - SOP HIA ANTIPOLI	France	12-09-2012	16-09-2012	1950	1591	Quantum Gravity and Automorphic Functions

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date		12-12-2013	125400.00	Ph.D. in Physics and Relativistic Astrophysics
FLEIG	PHILIPP	M	German	IMPERIAL C OLLEGE LON DON	Germany	AEI - POTSDA M	Germany	17-09-2012	02-03-2013	Quantum Gravity and Automorphi c Functions	1950	1591	
FLEIG	PHILIPP	M	German	IMPERIAL C OLLEGE LON DON	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	03-03-2013	28-03-2013	Quantum Gravity and Automorphi c Functions	1950	1591	
FLEIG	PHILIPP	M	German	IMPERIAL C OLLEGE LON DON	Germany	AEI - POTSDA M	Germany	29-03-2013	30-04-2013	Quantum Gravity and Automorphi c Functions	1950	1591	
FLEIG	PHILIPP	M	German	IMPERIAL C OLLEGE LON DON	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	01-05-2013	31-05-2013	Quantum Gravity and Automorphi c Functions	1950	1591	
FLEIG	PHILIPP	M	German	IMPERIAL C OLLEGE LON DON	Germany	AEI - POTSDA M	Germany	01-06-2013	30-09-2013	Quantum Gravity and Automorphi c Functions	1950	1591	
Total for FLEIG, PHILIPP : 18												125400.00	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	06-09-2010	30-09-2010	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	Germany	FREIE UNIVER SITÄT BERLIN	Germany	01-10-2010	12-12-2010	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	13-12-2010	15-12-2010	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	Germany	FREIE UNIVER SITÄT BERLIN	Germany	16-12-2010	20-03-2011	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	21-03-2011	25-03-2011	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	Germany	FREIE UNIVER SITÄT BERLIN	Germany	26-03-2011	02-04-2011	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	France	UNIVERSITÉ D E SAVOIE - P RES "UNIVERS	France	03-04-2011	09-04-2011	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	Germany	FREIE UNIVER SITÄT BERLIN	Germany	10-04-2011	21-05-2011	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	22-05-2011	11-06-2011	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	Germany	FREIE UNIVER SITÄT BERLIN	Germany	12-06-2011	03-09-2011	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	04-09-2011	18-09-2011	Quantum phenomen na in the realm of Cosmology	1950	1591	
GRUBER	CHRISTINE	F	Australian	J. KEPLER UNIVERSITY LINZ	Germany	FREIE UNIVER SITÄT BERLIN	Germany	19-09-2011	28-04-2012	Quantum phenomen na in the realm of Cosmology	1950	1591	

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	125400.00	21-11-2013	Ph.D. in Physics and Relativistic Astrophysics
GRUBER	CHRISTINE E	F	Australian	J. KEPLER UNIVERSITY LINZ	Australia	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	29-04-2012	30-06-2012	Quantum phenomeno na in the realm of Cosmology	1590	1591
GRUBER	CHRISTINE E	F	Australian	J. KEPLER UNIVERSITY LINZ	Australia	STOCKHOLM UNIVERSITY	Sweden	01-07-2012	08-07-2012	Quantum phenomeno na in the realm of Cosmology	1590	1591
GRUBER	CHRISTINE E	F	Australian	J. KEPLER UNIVERSITY LINZ	Australia	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	09-07-2012	29-07-2012	Quantum phenomeno na in the realm of Cosmology	1590	1591
GRUBER	CHRISTINE E	F	Australian	J. KEPLER UNIVERSITY LINZ	Australia	FREIE UNIVERSITÄT BERLIN	Germany	30-07-2012	31-08-2012	Quantum phenomeno na in the realm of Cosmology	1590	1591
GRUBER	CHRISTINE E	F	Australian	J. KEPLER UNIVERSITY LINZ	Australia	UNIVERSITÉ D'ENICE - SOPHIA ANTIPOLI	France	01-09-2012	22-09-2012	Quantum phenomeno na in the realm of Cosmology	1590	1591
GRUBER	CHRISTINE E	F	Australian	J. KEPLER UNIVERSITY LINZ	Australia	FREIE UNIVERSITÄT BERLIN	Germany	23-09-2012	30-04-2013	Quantum phenomeno na in the realm of Cosmology	1590	1591
GRUBER	CHRISTINE E	F	Australian	J. KEPLER UNIVERSITY LINZ	Australia	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	01-05-2013	29-07-2013	Quantum phenomeno na in the realm of Cosmology	1590	1591
GRUBER	CHRISTINE E	F	Australian	J. KEPLER UNIVERSITY LINZ	Australia	FREIE UNIVERSITÄT BERLIN	Germany	30-07-2013	30-09-2013	Quantum phenomeno na in the realm of Cosmology	1590	1591
Total for GRUBER, CHRISTINE : 20												
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITÉ D'ENICE - SOPHIA ANTIPOLI	France	06-09-2010	30-09-2010	Gamma-ray lens development and test	1590	1591
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	01-10-2010	13-10-2010	Gamma-ray lens development and test	1590	1591
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITÀ DI FERRARA	Italy	14-10-2010	20-03-2011	Gamma-ray lens development and test	1590	1591
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	INTERNATIONAL CENTER FOR RELATIVISTI	Italy	21-03-2011	27-03-2011	Gamma-ray lens development and test	1590	1591
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITÀ DI FERRARA	Italy	28-03-2011	02-04-2011	Gamma-ray lens development and test	1590	1591
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITÉ D'ENSAVOIE - PRES "UNIVERS	France	03-04-2011	09-04-2011	Gamma-ray lens development and test	1590	1591
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITÀ DI FERRARA	Italy	10-04-2011	21-05-2011	Gamma-ray lens development and test	1590	1591
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITÉ D'ENICE - SOPHIA ANTIPOLI	France	22-05-2011	11-06-2011	Gamma-ray lens development and test	1590	1591
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITÀ DI FERRARA	Italy	12-06-2011	04-09-2011	Gamma-ray lens development and test	1590	1591

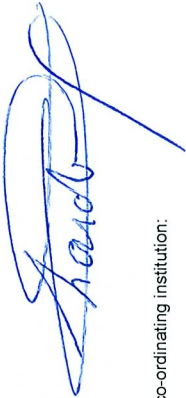
Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	1950	1591	125400.00	29-11-2013	Ph.D. in Physics and Relativistic Astrophysics	
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	05-09-2011	16-09-2011	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITA' D I FERRARA	Italy	17-09-2011	03-06-2012	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	04-06-2012	15-06-2012	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITA' D I FERRARA	Italy	16-06-2012	30-06-2012	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Sweden	STOCKHOLM UN IVERSTY	Sweden	01-07-2012	08-07-2012	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITA' D I FERRARA	Italy	09-07-2012	02-09-2012	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	France	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	03-09-2012	22-09-2012	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITA' D I FERRARA	Italy	23-09-2012	14-10-2012	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	France	UNIVERSITE D E SAVOIE - P RES "UNIVERS I FERRARA	France	15-10-2012	15-12-2012	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITA' D I FERRARA	Italy	16-12-2012	14-02-2013	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Sweden	STOCKHOLM UN IVERSTY	Sweden	15-02-2013	15-07-2013	Gamma-ray lens development and test	1950	1591			
LICCARDO	VINCENZO	M	Italian	UNIVERSITY FEDERICO II NAPOLI	Italy	UNIVERSITA' D I FERRARA	Italy	16-07-2013	30-09-2013	Gamma-ray lens development and test	1950	1591			
Total for LICCARDO, VINCENZO : 21													125400.00		
Total for Category B: 85 mobilities by 4 Doctoral Candidates													501600.00		
Total of 214 mobilities by 10 Doctoral Candidates													1281000.00		
Global Total: 214 mobilities for 10 persons													1281000.00		

Date (day/month/year):

16/11/2013

Name of the coordinator: Mr Pascal CHARDONNET

Signature:

A handwritten signature in blue ink, appearing to read 'Pascal Chardonnet', written over a large, faint circular stamp.

Stamp of the co-ordinating institution:

PART D: FINANCIAL DECLARATION ON THE USE OF THE EM GRANT

(to be filled in only in case that the final report includes a request for further pre-financing for an ongoing specific grant agreement)

Specific Grant Agreement Number: -

A	Total amount of the Grant:	
B	Amount of the first pre-financing payment received	
C	Amount spent by the consortium	
D	Percentage of the 1st pre-financing used (C / B)* x 100	

We have not fill this part since we have not yet overcome the 70% for the third cycle. We will do in March 2014 with the next Progress Report.

PART E: FINANCIAL DECLARATION ON THE USE OF THE EM GRANT

(to be filled in only in the case of a Final Report)

Specific Grant Agreement Number: 2010 - 1816

Type	Total pre-financed (A)	Total expenditure (B)	Balance (A minus B)
Flat rate consortium*1	50 000,00	49 964,40	35,60
Erasmus Mundus Category A Fellowships	779 400,00	779 400,00	0,00
Erasmus Mundus Category B Fellowships	501 600,00	497 501,82	4 098,18
Western Balkan and Turkey Fellowships (where applicable)	0,00	0,00	0,00
Total	1 331 000,00	1 326 866,22	4 133,78
Interests yielded by the pre- financing payments*2			0,00
TOTAL (in the event of a positive balance, the relevant amount will be recovered by the Agency)			4 133,78

***1: Provide a brief description on how the flat rate was used.**

We have used the flat rate essentially to organize our numerous PhD Schools, to the salary of Emmanuel LOSERO in Nice University and also for the promotion and management of our PhD program.

***2 If no interests have been declared, justify the reason for it here after (mandatory) :**

We confirm that the public accountant may have only one bank account for the management of all funds of the institution, individualized investment of these funds was not possible.

(Table 1)

PART E: FINAL REPORT FINANCIAL DECLARATION ON THE USE OF THE EM GRANT

Framework Partnership Agreement : Nr.2010-0011

Specific Grant Agreement : Nr. 2010 - 1816 / 001 - 001 - EIMJD

Type of Grant: Employment / Stipend	Laboratory Based / Non-Laboratory Based	Name of Doctoral Candidate:	Contract Duration		Duration in months (up to max. 36 Months)	Approved fellowship grant, excl. the Flat Rate (annex II of the SGA)	Gross Salary/Stipend	Fellowship Amount			If interruption in the contract duration (i.e. maternity leave, prolonged sick leave etc.:*) *Rate +Rate +Rate +Rate
			From (DDMM/YYYY)	To (DDMM/YYYY)				For Employment Contracts: Other costs not included under Gross Salary	Participation Cost	Fixed contribution to the travel, installation and any other types of costs:	
Employment Contract	Laboratory Based	BARANOV	01/09/2010	31/08/2013	36	129 900,00	100 800,00		21 600,00	7 500,00	
Employment Contract	Laboratory Based	BENEDETTI	01/09/2010	31/08/2013	36	125 400,00	100 800,00		21 600,00	1 615,53	
Employment Contract	Laboratory Based	DUTTA	01/09/2010	31/08/2013	36	129 900,00	100 800,00		21 600,00	7 500,00	
Employment Contract	Laboratory Based	FLEIG	01/09/2010	31/08/2013	36	125 400,00	100 800,00		21 600,00	2 285,15	
Employment Contract	Laboratory Based	FRAGA	01/09/2010	31/08/2013	36	129 900,00	100 800,00		21 600,00	7 500,00	
Employment Contract	Laboratory Based	GRUBER	01/09/2010	31/08/2013	36	125 400,00	100 800,00		21 600,00	2 099,04	
Employment Contract	Laboratory Based	LJICCARDO	01/09/2010	31/08/2013	36	125 400,00	100 800,00		21 600,00	1 902,10	
Employment Contract	Laboratory Based	MARTINS DE CARVALHO	01/09/2010	31/08/2013	36	129 900,00	100 800,00		21 600,00	7 500,00	
Employment Contract	Laboratory Based	PENACCHIONI	01/09/2010	31/08/2013	36	129 900,00	100 800,00		21 600,00	7 500,00	
Employment Contract	Laboratory Based	VALSAN	01/09/2010	31/08/2013	36	129 900,00	100 800,00		21 600,00	7 500,00	
						1 281 000,00	1 008 000,00		216 000,00	52 901,82	1 276 901,82

Flat rate:

50 000,00

Total spent on Doctoral Candidate:

1 276 901,82

Total Community Grant spent on Doctoral Candidate:

1 326 901,82

Interest Earned:

0,00

BENEFICIARY DECLARATION

I, the undersigned, hereby irrevocably declare that:

- the information contained in this report is accurate and in accordance with the facts.
- the report includes the duly updated doctoral candidates data extracted from the “Erasmus Mundus Mobility Database” signed by the joint programme's co-ordinator
- the information has been checked and approved by the partners involved.

- the amounts in the mobility database as well as Part D (in the event of a further pre-financing request) and Part E of this report are accurate and reflect the true expenditures of the specific grant agreement(s) concerned
- the duly updated doctoral candidates data extracted from the “Erasmus Mundus Mobility Database” signed by the joint programme's co-ordinator includes the accurate fellowship amounts spent on each doctoral candidate.

Signature of the beneficiary's legal representative*:

Name and position:

Date:

Signature:

** if the signatory is not the legal representative (as indicated to the Agency) add a valid document confirming their authorisation to sign on his/her behalf*