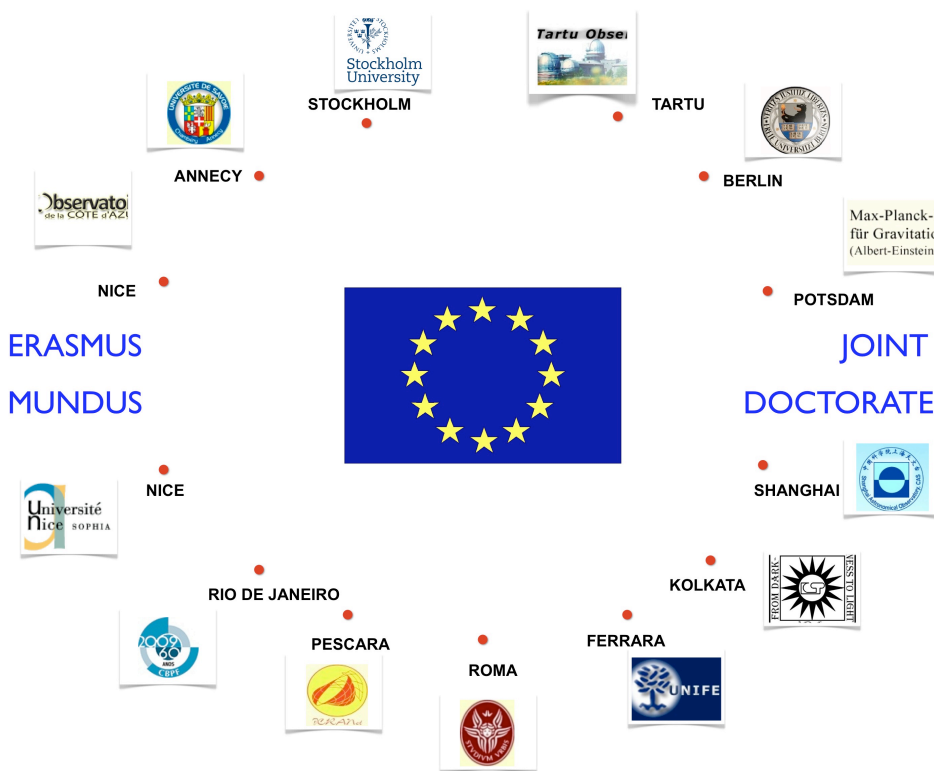


# IRAP PHD PROGRAM



<http://www.irap-phd.eu>



### Annex III

**Report Form to be used for the submission of the**

**Progress Report**

**and/or**

**Further pre-financing request**

**THIS REPORT IS SUBMITTED UNDER THE FRAMEWORK PARTNERSHIP AGREEMENT**

-

**In the context of:**

**The mandatory progress report for the first/second specific grant agreement with the number:**  -  (e.g. “2012 –1234”) **and/or**

**The request for the further pre-financing payment for the specific agreement number:**  -  (e.g. “2012 –1207”)

#### **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\\_2012.pdf](http://eacea.ec.europa.eu/erasmus_mundus/beneficiaries/documents/action1/sga_emjd_annex_v_handbook_2012.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 additions 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-list<sup>1</sup>

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

**Project N° : 2012-1710**

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

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

<sup>1</sup>Please 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 process of the assessment of your admissible report, please take also into consideration the following points which are mandatory to submit for Progress Report and 2<sup>nd</sup> Pre-financing (check boxes)<sup>2</sup>*

**CONTENT CHECK LIST**

		<b>YES</b>	<b>NO</b>
1	The <b>narrative part</b> of the report has been submitted in line with the instructions given in PART A; TECHNICAL PART	X	<input type="checkbox"/>
2	<b>EACEA MOBILITY TOOL (EMT):</b> 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 – financial data only mandatory for 2 <sup>nd</sup> pre-financing request-) 3.2 The candidate scholarship data has been extracted (by using the progress report hyperlink) and attached to the report. 3.3 The non-scholarship data has been extracted (by using the "export to pdf" functionality) and attached to the report. 3.4 The extracted lists have been signed and dated by the coordinator.	X  X  X	<input type="checkbox"/>   X  <input type="checkbox"/>
5	A template of <b>the employment contract(s) used</b> is included in the report	X	<input type="checkbox"/>

**Additionally to submit for 2<sup>nd</sup> Pre-financing (check boxes):**

		<b>YES</b>	<b>NO</b>
1	The <b>financial declaration</b> 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"/>	X

<sup>2</sup>Please 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.

2	Is the <b>total expenditure</b> as indicated in the EMT print-out (EM candidate scholarships) in full coherence with the figures indicated in the financial declaration of Part E? ( <b>NB:</b> 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"/>	<input type="checkbox"/>
3	Has the <b>lump sum/flat rate</b> been added to the total expenditure in the financial declaration of Part E?	<input type="checkbox"/>	<input type="checkbox"/>

- The technical (/narrative) part of thereport 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.ec.europa.eu/mobility/docs/EACEA-Mobility-database-guidelines-EM.pdf>

- The original and one copy of the report must be sent no **later (as per postmark) than by the deadline (15/03/2013) 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 report must be sent no later than by the deadline (**15/03/2013**) to the following e-mail address: [eacea-em-consortia@ec.europa.eu](mailto: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).

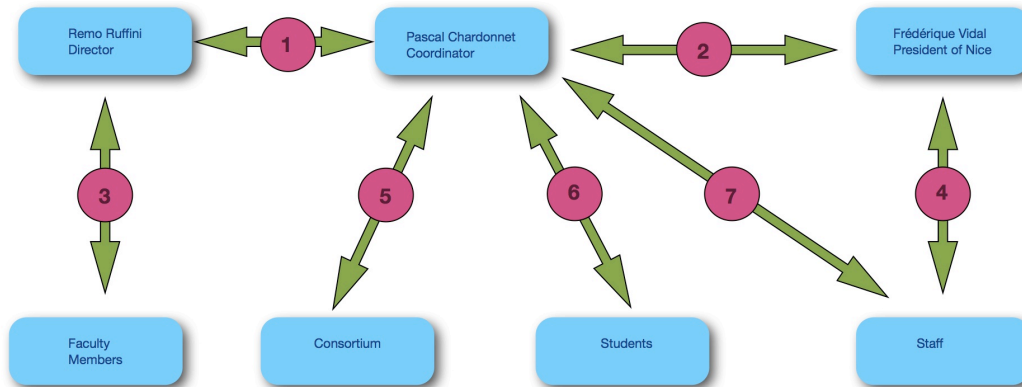
**1. Please describe the consortium activities since the submission of the last report (or the approval of the original application in case this is the 1st report ever submitted) for what concerns:**

**a. The consortium organisation (administrative, academic, research and financial management) and specific roles of individual partners (including, if applicable, associated partners)**

- Our IRAP PhD program is composed of a Scientific Staff in charge of all the scientific part: selection of the candidates, thesis projects, supervising the progress of each candidates, preparation of the PhD School in Relativistic Astrophysics.
- This staff is directed by Prof. Remo Ruffini. In add to this staff, we have an administrative staff in Nice University.
- The coordinator is Prof. Pascal Chardonnet

After the selection meeting and the approval of the main list by the Agency, our candidates are officially informed by the coordinator (see Annexe-1). We gave them 10 days in order to accept our offer. Generally our candidates accepted immediately and then the coordinator start to write “the convention d’accueil”. This document is essential in order to obtain French visa (Annexe-2). At the same time, the coordinator communicate the names of the PhD students to Marsh Insurance. In such way, we could send by email the student card (Annexe-3). This is very useful because certain consulates asked an Insurance. The original card is given to the student at his arrival in Nice.

The organization chart is attached in hereby (please notice that the name of the new President of Nice University is Prof. Frédérique Vidal. It should be changed in the EM Mobility Tool)



TASKS	ACTORS	OBJECTIVES
1	Director/Coordinator	Preparation of the new Edition: milestones for the new edition
2	President of Nice/Coordinator	Preparation of progress reports - Signatures
3	Director/Faculty	Preparation of the School- Selection committee -Thesis Subjects
4	President of Nice/Staff	Signatures
5	Coordinator/Consortium	Report every two months of the activities and to prepare important dates
6	Coordinator/Students	Weekly email for enquiring of the local status of students
7	Coordinator/Staff	Daily email for the standard staff: reimbursements - payment -

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. Julie Coquin 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 2 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 Mrs. Annie Vidal, through Mrs. Cathy Siveri who checks the expenses, then Mrs. Veronica Gallo from accounting agency makes payments. Finally, Julien Chabert saves providers records on the software "SIFAC" so that banking informations could be stored in the database. The Accounting office also performs the grants' payment. Pina Barbaro is in close contact with the students for Bank account, Social security problem, booking rooms in Nice

- Before the arrival of the students the coordinator communicates to the staff in Nice the names and identity of the winner.

- In such way, the employment contract is prepared before the arrival of the students.
- At the arrival in Nice in September, our non European student open a bank account in Nice. We have an agreement with a Bank: the credit card is free and the bank give 50 euros welcome for all our students.
- At the same period, our students will also do the other formalities for Social Insurance Card and for Residence Permit.

#### **b. The payment modalities of the individual fellowships**

Since all bureaucratic part are well prepared the students can received their salary on the European bank very easily. The participation cost are also sent directly to the host institution.

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

First of all we have a dedicated website: [www.irap-ph.eu](http://www.irap-ph.eu)

This allows us to promote all the activities of our PhD program: all the thesis subjects are online. This year, we have add three important part:

- a full integrate online registration (see numerous annexes on web) with possible help at any stage of application. All our candidates are very satisfy by this new procedure. It is very easy and each candidate can return up to the deadline to its own application and modify. This is a very good process. Then the referee have, invited by candidates, can also have access to the application and put an evaluation and upload easily a letter of recommendation. In add, the coordinator could invite numerous evaluators that have access to all applicants and put individual evaluation. At the end of the call, we could extract a full pdf (or excel table ) of all candidate or individual file for each candidate. This procedure is quite new and very powerful. I have put in annexe all the pages, and I hope that the Erasmus Mundus Team help us also to improve this procedure. I already asked candidates. They find this procedure “easy” and “friendly”.
- An intranet section for all partner members and for all our EMJD students. We notice that to send important documents by emails is “old fashion” and the best is to have a secure place where to store all important of the live of our consortium. I have put also the presentation of students during meeting, so prof could have access to the presentation of other students. (see Annexe 5 and <http://irap-phd.eu/page15/page15.html> button “intranet”)
- This year we have bough a independent server to be sure that all documents regarding the calls couldn’t be violate from external part. Only our consortium member have access to this server. We have declare this activity to the CNIL in agreement to their request. When the candidate apply, they are all informed individually about the personal treatment of their personal data (see page “submit” in Annexe)
- Now, regarding promotion, for this new call 2013 (fourth edition) we have realized 2000 posters sent all over the world using ICTP network as previous years. This year we do not have realized advertisement in Nature and CERN. But, in addition, we have used the network Campus France to distribute our activities and also : <http://www.inspirehep.net>. Apparently this new method is very successful since we



get more students (162) than last year (129) and we spend less money in adverts. This is an example of good practice that could be underlined.

- 
- Using the network of Campus France, we get many candidates, most of them are weak, but this also tells us some expectation of these countries in front of European Program in Education. I notice reading the application a great hope toward Europe. Maybe it should be a way to come up to somebody's expectations.
  
- The coordinator has created a dedicated page on Facebook where some activities of our program are given: Irap Phd-Program
  
- We have also created a global document for all the cycle accessible online (63 Mb): [http://laph.cnrs.fr/pg-nomin/chardon/IRAP\\_PhD/EMJD-Students.pdf](http://laph.cnrs.fr/pg-nomin/chardon/IRAP_PhD/EMJD-Students.pdf)
  
- Acknowledgements : we have imagined a canonical way for the students to thank ERASMUS MUNDUS in their papers. This is a way to promote the Erasmus Mundus Program inside the scientific community :

for the cycle I (2010-2013):

"Student Name Student Surname" is supported by the Erasmus Mundus Joint Doctorate Program by Grant Number 2010-1816 from the EACEA of the European Commission

for the cycle II(2011-2014):

"Student Name Student Surname" is supported by the Erasmus Mundus Joint Doctorate Program by Grant Number 2010-1640 from the EACEA of the European Commission

for the cycle III(2012-2015):

"Student Name Student Surname" is supported by the Erasmus Mundus Joint Doctorate Program by Grant Number 2010-1710 from the EACEA of the European Commission

**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 only for a limited period : the duration of the edition. We have informed the CNIL 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 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 Doctorale 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 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. »*

#### 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**. We organized each September a one-month meeting in Nice. This help 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. Now all our students know themselves and it happens that they visit each other in special occasions like birthday. They also exchange scientific information on links, interesting papers. The feedback from them is that our idea is very welcome. They didn’t expected such “School” at PhD level.
- We are thinking to use also iTunes U to promote video of our courses.
- All the courses of our PhD Schools are online and therefore are accessible to everyone:

<http://irap-phd.eu/page9/page9.html>

These courses given by leading experts in the fields have a great success not only among our PhD students but also to other students and researchers that have access freely to the result of our PhD School in Relativistic Astrophysics.

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

This is the matter of the Faculty. But we also used the expertise of 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 is 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 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 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 concrete measures taken by the consortium with the relevant ethics committees and/or national/local authorities to address, where applicable, ethical issues arising from the research activities of the Doctoral Candidates**

This is the matter of the Faculty. But we also used the expertise of external our scientific subject “Relativistic Astrophysics” is not related directly to ethical issues. But we took care of personal data using the service and the control of the CNIL ( <http://www.cnil.fr/> ) where we have declare our website and our activities of promotion and recruitment of PhD students.

**h. 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 provide with great facility the lodging house, office and local help for students during mobility period.

Due to our spirit of « PhD School » the mobility is also seen improved by the fact that all students know themselves. In some case they already visited the new institute for mobility because they have visited their friends there for birthday occasion !

Doctoral Candidate must validate at least 180 hours of courses, lectures and seminars every year – as attested by the Faculty .

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.

#### **i. The EMJD evaluation and monitoring mechanisms**

One of our evaluation is obtained directly from our PhD students. Each year the coordinator asks the students to write a free report about all the activities of the past year. Then the coordinator present this report to the consortium and propose improvements related to students 'suggestions.

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 defence of the thesis and approves the composition of the defence committee.
- Oversees the fulfilment 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 labour market
- Oversees the quality of the program, also by collecting evaluation forms from the candidates

We have add an intranet page to all students and all the consortium members where all relevant documents are accessible (progress reports, guide, presentations of students, PhD School, Consortium agreement, Candidate Doctorale Agreement, consortium meeting..).

<http://irap-phd.eu/page15/page15.html>

In such way, each member of our consortium (Professors, Administrative Stall and also students) can have access to all information about our PhD program. See Annexe-4

**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)**

During the year 2011 an important step has been overcome by a text of the French Ministry of Education on Joint Diploma.

This full text can be downloaded using the link :

<http://www.2e2f.fr/docs/circulaire-diplomes-conjoints-du-9-juin-2011.pdf>

**B.O.** Bulletin officiel n° 23 du 9 juin 2011  
Annexe 1

<p><b>MASTER</b>          délivré en partenariat international par l'Université de [...] avec l'Université de [...] et l'Université de [...]  <i>Mentions relatives au diplôme de master délivré dans les pays, par exemple :</i>  <b>MASTER OF ARTS</b>          awarded by the x partner universities of [...] and [...]  <b>LAUREA SPECIALISTICA</b>          rilasciata in partenariato internazionale dall'università di [...] con l'università di [...] e l'università di [...]</p>		
<p><b>RÉPUBLIQUE FRANÇAISE</b>  <b>MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE</b></p>	<p><b>UNITED KINGDOM</b>  <b>UNIVERSITY OF</b></p>	<p><b>REPUBBLICA ITALIANA</b>  <b>UNIVERSITÀ</b></p>
<p>Vu le code de l'éducation ;          Vu le décret n° 84-573 du 5 juillet 1984 modifié relatif aux diplômes nationaux de l'enseignement supérieur ;          Vu le décret n° 2002-481 relatif aux grades et aux titres universitaires et aux diplômes nationaux ;          Vu le décret n° 2005-450 du 11 mai 2005 relatif à la délivrance de diplômes en partenariat international ;          Vu les textes autorisant l'université ... de ... , l'université ... de ... , à délivrer des diplômes de niveau master dans le cadre de l'Espace Européen de l'Enseignement Supérieur ;          Vu l'arrêté du 25 avril 2002 relatif au diplôme national de master ;          Vu l'arrêté ministériel du ..... relatif à l'habilitation de l'université de [...] à délivrer des diplômes nationaux ;          Vu les pièces justificatives produites par M ..... né le ..... à ..... en vue de son inscription au diplôme de master ;          Vu les procès-verbaux du jury attestant que l'intéressé(e) a satisfait au contrôle des connaissances et des aptitudes prévus par des textes réglementaires ;          Le diplôme de <b>MASTER</b> (intitulé du domaine)....., à finalité (recherche ou professionnelle).....mention..... spécialité.....          est délivré à M. [prénom, NOM patronymique]          au titre de l'année universitaire 2010-2011          et confère le grade de Master,          pour en jouir avec les droits et prérogatives qui y sont attachés.</p> <p><b>Décerné à [ ], le [ ]</b></p> <p>Le titulaire      Signature du chef d'établissement      Le Recteur de l'académie, chancelier des universités</p> <p>Numéro du diplôme :</p>	<p><b>MASTER OF ARTS</b></p> <p>[Date et lieu de délivrance par l'établissement d'enseignement supérieur partenaire]          Signature du chef d'établissement d'enseignement supérieur étranger</p>	<p><b>LAUREA SPECIALISTICA IN</b></p> <p>[Date et lieu de délivrance par l'établissement d'enseignement supérieur partenaire]          Signature du chef d'établissement d'enseignement supérieur étranger</p>

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On the basis of this text we are building an exemplary of Joint Diploma (Annexe-6)

- The thesis is subject to only one examination (thesis defence) recognized by all Degree Awarding Institutions.
- The thesis defence will take place at the Host Institution following the local rules and regulations. The Thesis Adviser and Co-Adviser (if applicable) shall be present at the Defence.

- The thesis is written in English as the common language to all the Institution of the IRAP PhD a summary in the language of the Host Institution may be required, depending on local regulations.
- 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 no less than 2 weeks.
- Each Referee, following her/his assessment duly and amply documented in a written report in English, recommend or not the authorization for the Thesis Defence.
- The authorization to defend the Thesis is granted by the Host Institution hosting the Proceedings in agreement with the regulations stipulated in the Consortium Agreement.

Here we report the Article 5 –A) of our Consortium Agreement regarding the degree awarded :

“

#### ARTICLE 5A) – DEGREE AWARDING INSTITUTION

§1. Degree-Awarding: At the end of their curriculum the Students are awarded a joint Ph.D. title signed by the Rectors/ Presidents of the six Academic Institutions of the IRAP PhD consortium. See also paragraph 11 of the Doctoral Candidate Agreement ( see Annexe 3)

§2. The language of the thesis, the authorization to defend the thesis, the composition of the defence committee, the thesis defend procedure and intellectual property have been outline in the paragraph 10.1, 10.2, 10.3, 10.4, 12 of the Doctoral Candidate Agreement ( see Annexe 3)“

#### **k. Other related activities that may directly benefit the EMJD**

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

This year we have modified our application procedure via a new website on a server dedicated uniquely to our PhD program. It is very easy to apply and the student can modify their application up to the deadline by adding new documents. There is a part for evaluators and for referee. If we look to the reaction of students of this year, they are very satisfy by this procedure. Of course there is always the possibility to request help at any moment of the application. See Annexe-Web

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.

### Summary Data

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

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

4.

## PART B: EM FELLOWSHIP HOLDERS REPORT

<b>Doctoral Candidate name (first name - LAST NAME)</b>	<b>Enrolment date in the Joint Programme*</b>
<i>Eckhard STROBEL</i>	<i>01.09.2012</i>
<b>Name and Institution of the Doctoral Candidate Supervisors*</b>	
<i>Prof. She-Sheng Xue, Università di Roma "La Sapienza"/ICRANeT Pescara</i>	
<i>Prof. Hagen Kleinert, Freie Universität Berlin/ICRANeT Pescara</i>	
<b>Title of the EMJD research project*</b>	
<i>Critical and Overcritical Fields</i>	
<b>Short summary of the EMJD research project*</b> (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><i>The thesis is centred around the study of critical and overcritical electromagnetic fields. Strong electromagnetic fields play an important role in electron positron pair production, a process which is believed to occur during the gravitational collapse which leads to the formation of Black Holes, which is in turn connected to the important astrophysical process known as Gamma Ray Bursts.</i></p> <p><i>Currently laser technology gets near the regime of the critical electromagnetic field. There exists the possibility that self focussing materials such as electron-positron plasmas can be used to examine these processes.</i></p> <p><i>The aim of the PhD thesis is to theoretical investigate the pair production in electromagnetic fields as well in the astrophysical as in the laboratory context.</i></p> <p><i>To deepen my understanding of astrophysical processes I will attend several PhD schools which are hosted especially for the students of this PhD programme.</i></p>	
<b>Main activities implemented by the doctoral candidate since the delivery of the last report</b>	
<p><i>Since the start of my research work I studied the literature on the subject of critical electromagnetic fields. I also performed first calculations starting from the effective Euler-Heisenberg Lagrangian. Expanding it in a form using sums lead to an approximation for strong fields. This formulation indicates that there is the possibility to write Quantum Electrodynamics as a fractional Quantum Field Theory as has been done beforehand for strongly coupled many particle theories.</i></p> <p><i>Additionally to this research work I visited a school on astrophysics in Nice in September 2012 and the conference "The Current Issues on Relativistic Astrophysics" in Seoul in October 2012.</i></p>	
<b>Main activities planned to be implemented during the 12 months following the submission of this report</b>	
<p><i>In the next year I plan to further elaborate the idea of fractional Quantum Electrodynamics. In detail this should incorporate the investigations of physical implications of the mathematical construct.</i></p> <p><i>Furthermore I want to investigate the influence of self focussing materials like electron-positron-plasmas on the pair-production rate in strong electromagnetic fields.</i></p> <p><i>Additionally to this I will visit a second school on astrophysics in Nice in June of 2013.</i></p>	



<b>Doctoral Candidate name (first name - LAST NAME)</b>	<b>Enrolment date in the Joint Programme*</b>
Maxime ENDERLI	September 2012
<b>Name and Institution of the Doctoral Candidate Supervisors*</b>	
Supervisor: Carlo Bianco, Sapienza University of Rome Co-supervisors: Remo Ruffini and Luca Izzo, ICRA Net and Sapienza University of Rome	
<b>Title of the EMJD research project*</b>	
Cosmological structures and cosmological parameters with gamma-ray bursts	
<b>Short summary of the EMJD research project*</b> (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 aim of the project is to use observations of gamma-ray bursts in order to find relations and tests regarding cosmological issues. Since gamma-ray bursts can be detected out to very large distances, they are natural candidates to probe cosmological models. Particular attention is given to the possibility of using them as standard candles.</p> <p>Mandatory mobility:</p> <ul style="list-style-type: none"> <li>- Erasmus Mundus school in Nice, France, 3rd - 19th September 2012</li> <li>- Current issues in relativistic astrophysics in Seoul, South Korea, 5th - 6th November 2012</li> </ul>	
<b>Main activities implemented by the doctoral candidate since the delivery of the last report</b>	
<ul style="list-style-type: none"> <li>- Participated to the EMJD school in Nice.</li> <li>- Surveyed current literature on gamma-ray bursts and studied several issues related to the subject.</li> <li>- A first series of computations has been carried out to check the consistency of cosmological models with the hypothesis of a standard late-time behaviour of some gamma-ray bursts.</li> </ul>	
<b>Main activities planned to be implemented during the 12 months following the submission of this report</b>	
<ul style="list-style-type: none"> <li>- Explore the apparent clustering of the late-time behaviour of some sub-classes of gamma-ray bursts</li> <li>- Build up on existing work on the luminosity function and the rate density of gamma-ray bursts</li> </ul>	

<b><i>Doctoral Candidate name (first name - LAST NAME)</i></b>	<b><i>Enrolment date in the Joint Programme*</i></b>
<i>Anastasia FILINA</i>	<i>September 2012</i>
<b><i>Name and Institution of the Doctoral Candidate Supervisors*</i></b>	
<i>Prof. Pascal Chardonnet LAPTH , Université de Savoie PRES Grenoble</i>	
<b><i>Title of the EMJD research project*</i></b>	
<i>Astrophysics and Cosmology with Gamma-Ray Bursts.</i>	
<b><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></b>	
<p><i>When the satellite BeppoSAX detected afterglow (fading X-ray emission) after detecting of a gamma-ray burst, it was proved the cosmological nature of GRB. For GRBs with known redshift we can construct the distribution of observed GRBs per redshift. This statistical analyses of GRBs is necessary for understanding the nature of GRB phenomena, because we can based our theory about progenitors of GRBs on observational data, and use it for comparison of results. This requires consideration of the various models, like different explanations of GRB rate, different form of luminosity function of GRBs. Because for the satellites becomes to possible to detect GRBs with higher values of redshifts, if connect the nature of GRBs with the death of massive stars, it could be possible to better understand the era of the first stars.</i></p> <p><i>Mobility:</i></p> <p><i>Erasmus Mundus School Nice, France 01.09.2012-22.09.2012</i></p> <p><i>Scientific collaboration, Ferrara, Italy 23.10.2012-09.11.2012</i></p>	
<b><i>Main activities implemented by the doctoral candidate since the delivery of the last report</i></b>	
<b><i>Main activities planned to be implemented during the 12 months following the submission of this report</i></b>	
<i>We plan to consider cosmology of very massive stars and pair-instability supernovae. This is a very important area which could allow us to estimate the GBR-rate depending on redshift.</i>	

<b>Doctoral Candidate name (first name - LAST NAME)</b>	<b>Enrolment date in the Joint Programme*</b>
<b>Fernanda – GOMES DE OLIVEIRA</b>	September 2012
<b>Name and Institution of the Doctoral Candidate Supervisors*</b>	
Jorge Rueda – ICRANet and Sapienza University of Rome Remo Ruffini – ICRANet and Sapienza University of Rome	
<b>Title of the EMJD research project*</b>	
Induced Gravitational Collapse, GRB-SN connection, Neo-Neutron Stars	
<b>Short summary of the EMJD research project*</b> (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>- One of the main parts of the project is devoted to study the evolution of binary systems composed of an evolved star and a neutron star and the conditions under which they lead to the process of Induced Gravitational Collapse (IGC), within the context of the gamma-ray burst (GRB) supernova (SN) connection. It supposes the study the conditions that lead to a SN explosion of the evolved star before the system could merge by the shrinking of the orbit owing to gravitational wave emission. There are in addition other conditions besides the above for the occurrence of the IGC as short orbital periods of order of minutes.</p> <p>- It is studied also the emission of gravitational waves from neutron star binaries originating short GRBs, and their detectability by the new generation of gravitational wave detectors.</p> <p>- The emission coming from the neo-neutron star originated by the SN in the IGC process.</p>	
<b>Main activities implemented by the doctoral candidate since the delivery of the last report</b>	
<p>- Study of the IGC scenario, the evolution of binary systems and the GRB-SN connection.</p> <p>- Calculation of the emission of gravitational waves from neutron star binaries leading to short GRBs and the sensitivity of gravitational waves detectors such as Virgo, Ligo, and Advance Ligo. A first study was done using the point-like and non-relativistic approach. The characteristic amplitude of gravitational waves and the sensitivity curve for broadband detectors such as Virgo, Ligo, and Advance Ligo was built.</p> <p>The doctoral candidate participated in the Astrophysics School in Nice/Sophia Antipolis from September 6<sup>rd</sup> to September 21<sup>st</sup> 2012.</p>	
<b>Main activities planned to be implemented during the 12 months following the submission of this report</b>	
<p>- The next goal is to study an extension of the point-like approach for the gravitational wave emission; the effective one body approach of Damour and collaborators. In doing this we will include the effects of tidal interactions in binaries at different Post-Newtonian series-expansion levels. This will be applied both to double neutron stars as well as to IGC binary progenitors. This needs at the same time to study the effects of the nuclear equation of state of neutron stars in the tidal interactions.</p> <p>- A mobility stay is planned to take place in France.</p>	

<b>Doctoral Candidate name (first name - LAST NAME)</b>	<b>Enrolment date in the Joint Programme*</b>
ZEINAB KHORRAMI	01/09/2012
<b>Name and Institution of the Doctoral Candidate Supervisors*</b>	
Prof. Farrokh Vakili and Dr. Olivier Chesneau Observatoire de la Cote d'Azur	
<b>Title of the EMJD research project*</b>	
"Initial Mass Function and Kinematics of Star Burst Region in 30 Doradus with VLT adaptive Optics"	
<b>Short summary of the EMJD research project*</b> (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>R136 is a massive compact star cluster near the center of 30 Doradus in Large Magellanic Cloud with stellar ages for the most massive stars in the range of 1-2Myr and a total stellar mass in the range of <math>\sim 0.35-1 \cdot 10^5 M_{\odot}</math></p> <p>The aim of my project is to observe this cluster with the new instrument SPHERE. SPHERE will be installed on the Nasmyth platform of the Very Large Telescope (VLT) based on extreme adaptive optics correction and high contrast coronagraphic imaging. In this way we will be able to resolve the core of the cluster, detect faint star in the vicinity of the bright and massive supergiants, providing a better constraint on the initial mass-function of the cluster. Moreover, highly accurate astrometry will be performed as a starting point of a long term study of the kinematics of the fast moving stars ('runaways').</p> <p>This object may provide key answers to many fundamental questions regarding the physics of the formation of stars, stellar clusters and their role in the cosmos.</p>	
<b>Main activities implemented by the doctoral candidate since the delivery of the last report</b>	
<p><b>Workshops and Schools:</b></p> <p>1- Shaping E-ELT Science and Instrumentation, ESO, Munich, Germany, Feb. 25- Mar. 1, 2013</p> <p>2- SPHERE science meeting, Grenoble, France, December 12-14, 2012</p> <p>3- IRAP school, Valrose University, Nice, France, September 03-22, 2012</p> <p><b>Talk:</b></p> <p>" High Spatial resolution of the compact starburst cluster R136 at 50 to 10 mas ", Fizeau building of Valrose University, Nice, France, Feb 18, 2013</p> <p><b>Poster:</b></p> <p>" High Spatial resolution of the compact starburst cluster R136 at 50 to 10 mas ", Poster presentation in Shaping E-ELT Science and Instrumentation meeting, ESO, Munich, Germany, Feb. 25- Mar. 1</p>	
<b>Main activities planned to be implemented during the 12 months following the submission of this report</b>	
<p>During the first 6 months, since the beginning of my thesis in September 2012, I have explored different aspects of my research subject in the context of:</p> <p>1) Extreme Adaptive Optics on the 8m telescope facility of ESO at Paranal/Chili with the SPHERE 2<sup>nd</sup> generation focal instrument of SPHERE. I emphasize that I will benefit from the guaranteed time for observation (GTO) since my thesis host institute (OCA) is member of the consortium that constructs SPHERE.</p> <p>2) The nature, mechanisms and processes that govern the physics of compact star formation clusters and more precisely R136 complex of 30 Doradus in the Large Magellanic Cloud galaxy. I have made an extensive literature study of this object both from past and recent observations and the models and scenarios that have been proposed to unveil its nature.</p>	

3) I have explored different photometry oriented softwares, available in the literature, to analyse the individual star magnitudes of R136 on HST past observations.

My duty during the next year and beyond will be:

1) To carry a global photometric analysis of R136 (sometimes compared to similar stellar clusters of our own galaxy) from HST past observations and MAD (multiconjugate adaptive-optics demonstrator) images in IR wavelengths from the VLT/ESO. This will enable me to put constraints on the IMF of R136, to refine the core out to external star components of the cluster and eventually identify potential binary and/or very massive stars of the cluster. It is also hoped that this study can bring constraints and speculate on the kinematics of the cluster.

2) To prepare the observations of SPHERE for its science demonstration program which should start during the first semester of 2014.

For this I need to get familiar and become a user, even a developer, of the CAOS numerical simulator of SPHERE for those items that concern my R136 observations since this object is a real challenging target for SPHERE.

3) I will continue to develop and adapt a N-body numerical model that I have already developed and used during my Masters degree thesis to the case of R136.

The overall and final objectives for my thesis will be to draw a new picture of R136 for its physical parameters: high resolution in the IR images of its stellar components, their mass, luminosity and evolutionary status, their multiplicity statistics, the different population components, the IMF and hopefully from a multi-epoch survey of R136 get an accurate estimate of the mass and kinematics of this starburst compact cluster.

The studies, if successful would then be used to observe star formation regions of our own galaxy and others in our local group.

<b>Doctoral Candidate name (first name - LAST NAME)</b>	<b>Enrolment date in the Joint Programme*</b>
Disha SAWANT	01/09/12
<b>Name and Institution of the Doctoral Candidate Supervisors*</b>	
Prof. Fillipo Frontera, University of Ferrara Dr. Lorenzo Amati, INAF Bologna	
<b>Title of the EMJD research project*</b>	
Cosmology with GRBs	
<b>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)</b>	
<p><i>Gamma ray bursts are the brightest cosmological sources in the Universe., with isotropic luminosities upto 1054 Erg cm<sup>-2</sup>s<sup>-1</sup> and a redshift distribution extending atleast upto <math>z \sim 6.3</math>. Thus, these sources may be imperial for cosmological studies, if one can use them to provide measurements of the cosmological parameters independently of other methods, like cosmic microwave background, type Ia supernovae, baryon acoustic oscillations and galaxy clusters. However, GRBs are not standard candels, given that their luminosities span several orders of magnitude under the assumption of both isotropic and collimated emission. In the recent years, several attempts to standardize GRBs have been made, mainly on the basis of the correlation involving intensity indicator like (1) isotropic radiated energy (E<sub>iso</sub>) or the isotropic peak luminosity (L<sub>p,iso</sub>) or (2) the photon energy at which the time averaged <math>\nu F_\nu</math> spectrum peaks (peak energy) and other observables, like the break time of the afterglow light curve <math>t_b</math>. I am working on datasets (Beppo SAX, Fermi, Swift, BATSE, Konus-Wind) to refine time averaged values of E<sub>p,i</sub> and E<sub>iso</sub> by taking into account uncertainties on spectral parameters and fluences.</i></p> <p>Courses attended so far:</p> <p style="padding-left: 40px;">University Italian Language course</p> <p style="padding-left: 40px;">Mathematical Physics Course Courses I am attending at present: 1. Radiative processes in Astrophysics 2. X-Ray and Gamma Ray Astronomy Techniques Mobility so far: IRAP school ( 19<sup>th</sup>Spetember 2012- 22<sup>nd</sup>September 2012)</p> <p>Mobility foreseen: 1. In Observatory of Savoie (T.B.D.)</p>	
<b>Main activities implemented by the doctoral candidate since the delivery of the last report</b>	
<b>Main activities planned to be implemented during the 12 months following the submission of this report</b>	

<b><i>Doctoral Candidate name (first name - LAST NAME)</i></b>	<b><i>Enrolment date in the Joint Programme*</i></b>
<i>Benjamin Hendrik Martin LUDWIG</i>	<i>1.9.2012</i>
<b><i>Name and Institution of the Doctoral Candidate Supervisors*</i></b>	
<i>Prof. She-Sheng Xue, Universita di Roma "La Sapienza"/ICRANeT Pescara</i>	
<i>Prof. Remo Ruffini, Universita di Roma "La Sapienza"/ICRANeT Pescara</i>	
<b><i>Title of the EMJD research project*</i></b>	
<i>Electromagnetic fields space-time evolution in gravitationally collapsing stars</i>	
<b><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></b>	
<p><i>The project aims at solving the problem of gravitational energy extraction in collapsing situations. For this purpose a mechanism will be investigated in which gravitational energy is converted first to kinetic, then to electric field energy. Finally this electric field energy is dissipated by means of pair production and subsequent ultrarelativistic expansion of the resulting plasma.</i></p> <p><i>The doctoral candidate participated in the Astrophysics School in Nice/Sophia Antipolis from September 3<sup>rd</sup> to September 21<sup>st</sup> 2012 and on a scientific meeting at ZARM/Bremen from January 14<sup>th</sup> to January 17<sup>th</sup> 2013. A mobility stay is planned to take place in France.</i></p>	
<b><i>Main activities implemented by the doctoral candidate since the delivery of the last report</i></b>	
<p><i>The doctoral candidate has investigated models of spherically symmetric, static matter distributions and spherical collapse in general relativity and reproduced analytical and numerical results known from literature. He is setting up the equations that govern the collapse of a multicomponent charged matter distribution. He is also intensely studying pair creation and plasma oscillation in strong electric fields which might appear in the aforementioned collapsing situations, and reproducing respective results.</i></p> <p><i>Minor activities included the study of radiation hydrodynamics that governs the expansion of the plasma, as well as studies of the historical development of the fields of nuclear density matter and compact objects.</i></p>	
<b><i>Main activities planned to be implemented during the 12 months following the submission of this report</i></b>	
<p><i>The activities planned include the construction of successively more elaborate models for the aforementioned collapsing situation, including a realistic modelling of the strong force which appears to play an important role in the mechanism under investigation. Once a realistic collapse has been produced, the next step will be the inclusion of an algorithm that computes the pair production and its back reaction on the collapse. Further refinements would include precisely taking into account beta-processes during collapse and finite temperature effects on plasma oscillations.</i></p>	

- *This relevant information should be provided only once for the entire duration of the doctoral candidate EM*

<b><i>Doctoral Candidate name (first name - LAST NAME)</i></b>	<b><i>Enrolment date in the Joint Programme*</i></b>
Irina GALSTYAN	1 September, 2012
<b><i>Name and Institution of the Doctoral Candidate Supervisors*</i></b>	
Prof. Kjell Rosquist, Stockholm University; Dr. Stefan Fredenhagen, Max Planck Institute for Gravitational Physics	
<b><i>Title of the EMJD research project*</i></b>	
"Applications of Clifford Algebra in General Relativity and Quantum Field Theory"	
<b><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></b>	
<p>I found Quantum Field Theory and Group Theory of particular help while learning Particle Physics especially the Standard Model of Electroweak Unification. A good portion of this course was related to continuous and discrete symmetries and the spontaneous breaking of gauge symmetries. Understanding the nature of discrete symmetries and their violation in weak interactions has been an active field since middle 1950's. The violation of charge conjugation (C) and parity (P) have been incorporated in the Standard Model but the violation of CP and time reversal (TR) is still a mystery and they need to be understood.</p> <p>I worked on to construct some CP and TR odd observable for the decay modes <math>\Lambda_b \rightarrow \Lambda V</math> (<math>1^-</math>). Since both the decay products are polarized, they offer interesting opportunities to perform tests of CP, TR violation and of CPT invariance on the angular distributions and polarizations of the decay products. I have done the model independent calculations and pointed out several CP, TR and CPT odd observables. As an extension I worked on the 4th generation Standard Model effects in these decay channels. Their precise theoretical and experimental (LHCb) results would give us a chance to find a hint to answer the basic quest, why the Universe is made up of matter only and where anti- matter has gone?</p>	
<b><i>Main activities implemented by the doctoral candidate since the delivery of the last report</i></b>	
To apprehend the bridge between the physics of the small and the large, I started studying dualities especially the Gauge/Gravity duality. My main goal during the last months has been to obtain a better understanding of the higher spin field theories, and with this in mind I got an invitation to participate in the schools at ICTP (The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy), to learn the pedagogical treatment of these subjects in the form of a series of lectures by individual speakers, and the most important and perspective areas where significant progress has been achieved recently.	
<b><i>Main activities planned to be implemented during the 12 months following the submission of this report</i></b>	
Quite remarkably, the AdS/CFT duality became in the last decade an incredibly rich field for the interplay between experts in gauge theory, string theory and gravitational physics. Very recently, after the workshop at the AEI, 5-8 March, 2013, "Quantum Gravity and Fundamental Cosmology", this subject became even more fascinating to study higher	



dimensional AdS/CFT. For this purpose I am going through the basic literature on this subject. Actually, the motivation for considering higher-dimensional black holes with a cosmological constant arises from the AdS/CFT correspondence. Most studies of black holes in the AdS/CFT involve dimensional reduction on a compact manifold to obtain a d-dimensional gauged supergravity theory with a negative cosmological constant.

I am also interested in phenomenological consequences of string/M theory and related topics, theories of fundamental interactions, including quantum gravity.

These are the main directions we are going to explore in accordance with our research plans.

<b><i>Doctoral Candidate name (first name - LAST NAME)</i></b>	<b><i>Enrolment date in the Joint Programme*</i></b>
<i>Onelda BARDHO</i>	<i>01/02/2013</i>
<b><i>Name and Institution of the Doctoral Candidate Supervisors*</i></b>	
<i>Michel BOER (ARTEMIS/OCA -Nice)</i>	
<b><i>Title of the EMJD research project*</i></b>	
<i>Understanding the physics behind the correlations in Gamma-Ray Bursts data</i>	
<b><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></b>	
<p><i>My subject deals with the understanding of high energy transients and gamma-ray bursts. The goal is to explore the relations that exists between different quantities in GRBs, at X-ray but also at different wavelengths.</i></p> <p><i>The first work will be to continue the catalog of X-ray afterglow since many sources have been observed now.</i></p> <p><i>Then to start to work with correlation in afterglows. And finally, the correlations which are/will be established have to be interpreted in terms of the physics of the objects.</i></p>	
<b><i>Main activities implemented by the doctoral candidate since the delivery of the last report</i></b>	
<ul style="list-style-type: none"> <li><i>- General meeting of the National High Energy - 11-12 February 2013 at CNES headquarters in Paris</i></li> </ul>	
<b><i>Main activities planned to be implemented during the 12 months following the submission of this report</i></b>	
<ul style="list-style-type: none"> <li><i>- I will attend the next school of Erasmus Mundus.</i></li> <li><i>- IVth School of Astroparticle Physics, May 27th - June 1st, 2013, OHP, Saint Michel l'Observatoire</i></li> <li><i>- School of Gravitational Waves, 1 July 2013 – 5 July 2013, Warsaw, Poland</i></li> <li><i>- Preparation of a comprehensive catalog of X-ray afterglow properties together with Researchers in France, Italy and Australia</i></li> <li><i>- Participation to the annual meeting of the French FIGARO - Italian cooperation on GRB properties</i></li> </ul>	

## **PART C: EM MOBILITY DATABASE PRINT-OUTS**

The doctorate fellowship candidates' data extracted from the "**Erasmus Mundus Mobility Database**" must contain the most up to date mobility tracks of all candidates enrolled in the edition/s of the Joint Doctorate covered by this Progress Report ("mobility" hyperlink under each individual doctoral candidate name).

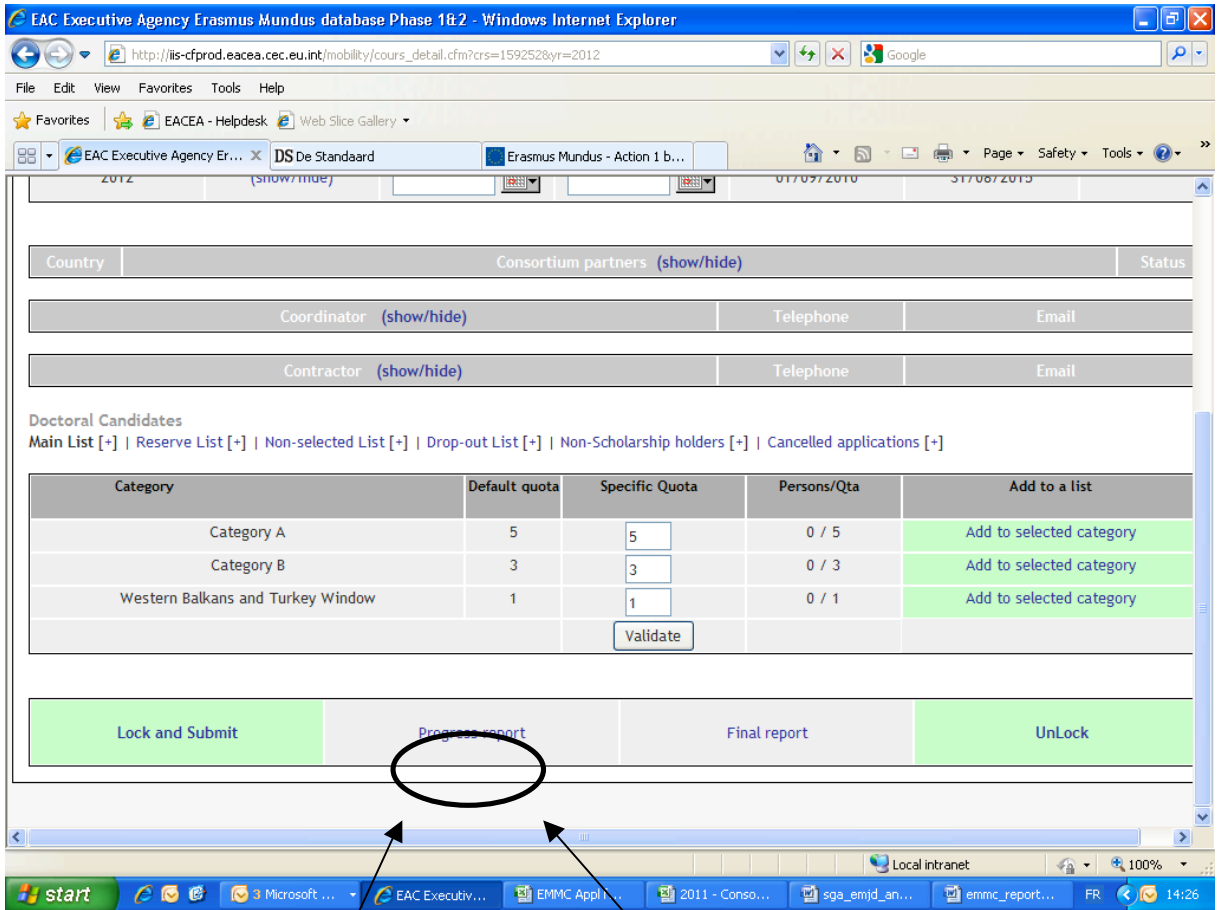
In case that the project requests the payment of the further pre-financing the mobility database must include all the necessary and updated financial information concerning payments of the Doctoral Candidates. The form/s must be signed by the project co-ordinator. The financial information in the mobility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



To be used for the **2<sup>nd</sup> Pre-Financing request/Progress Report**

***Non scholarship holders' data***

(output retrieved from the "Non-Scholarship holders" list of the course edition concerned)

EAC Executive Agency Erasmus Mundus database Phase 1 & 2 - Windows Internet Explorer

http://iis-cfprod.eacea.cec.eu.int/mobility/person\_list\_crs.cfm?type=DC&list=7&yr=2010

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Doctoral Candidates

Main List | Reserve List | Non-selected List | Drop-out List | Non-Scholarship holders | Cancelled applications

Agreement Nbr	Title	Application Year
2010-0006	Algebra, Geometry and Number Theory Joint Doctorate (EMJDMOB)	2010

Category B = 1 / 200 - Add to this category (show/hide custom phase data)

Family Name	Gender	Nationality	University of origin	Resid.	Rank	View	Request EACEA	Modify	Move	Report data	Mobility	Mobility bulk	Delete	Histor
SIVIERO	M	Italy	Universita degli studi di Padova	Italy	1	view	request	modify	move	data	mobility	<input type="checkbox"/>	delete	histor

Category A = 0 / 200 - Add to this category (show/hide custom phase data)

Export list

Category B

Category A

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To be used for 2<sup>nd</sup> Pre-Financing request, Progress

SEE MOBILITY\_CYCLE\_III.PDF

## PART D: TEMPLATE OF THE EMPLOYMENT CONTRACT(S) USED

This template needs to be sent only once with the first progress report. If applicable, any possible changes/adaptations of it should be reported and justified in the reports following the first progress report.

SEE ANNEXE-7.PDF

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

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

Specific Grant Agreement Number:  -

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

\* Please note that the second pre-financing payment may only be requested if 70% or higher of the first pre-financing has been spent.

## BENEFICIARY DECLARATION

I, the undersigned, hereby irrevocably declare that:

- the information contained in this report is accurate and in accordance with the facts.
- the duly updated doctoral candidates data extracted from the "Erasmus Mundus Mobility Database" signed by the joint programme's co-ordinator includes the accurate mobility information on each doctoral candidate
- the information has been checked and approved by the partners involved.
- the amounts are accurate and reflect the true expenditures of the specific grant agreement 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 (in capital letters):

Date:

Signature:

Le Président de l'Université  
de Nice - Sophia Antipolis



Frédérique VIDAL 7.1996

*\*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*

**Report:** Progress Report  
 Agreement number: 2010-0011  
 Project name: International Relativistic Astrophysics Doctorate Program  
 Project Edition: 2012  
 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	Amount received
FILINA	ANASTASIA	F	Russian	NATIONAL RESEARCH NUCLEAR UNIVERSITY	Russian Federation	UNIVERSITE D E NICE - SOPHIA ANTIPOLI	France	03-09-2012	22-09-2012	Astrophysics and Cosmology with Gamma-Ray Bursts	
FILINA	ANASTASIA	F	Russian	NATIONAL RESEARCH NUCLEAR UNIVERSITY	Russian Federation	UNIVERSITE D E SAVOIE - P RRES "UNIVERS	France	23-09-2012	22-10-2012	Astrophysics and Cosmology with Gamma-Ray Bursts	
FILINA	ANASTASIA	F	Russian	NATIONAL RESEARCH NUCLEAR UNIVERSITY	Russian Federation	UNIVERSITA D I FERRARA	Italy	23-10-2012	09-11-2012	Astrophysics and Cosmology with Gamma-Ray Bursts	
FILINA	ANASTASIA	F	Russian	NATIONAL RESEARCH NUCLEAR UNIVERSITY	Russian Federation	UNIVERSITE D E SAVOIE - P RRES "UNIVERS	France	10-11-2012	15-03-2013	Astrophysics and Cosmology with Gamma-Ray Bursts	29100.00
<b>Total for FILINA, ANASTASIA : 4</b>											
GALSTYAN	IRINA	F	Armenian	YEREVAN STATE UNIVERSITY	Armenia	UNIVERSITE D E NICE - SOPHIA ANTIPOLI	France	03-09-2012	22-09-2012	Applications of Clifford Algebra in General Relativity and Quantum Field Theory	
GALSTYAN	IRINA	F	Armenian	YEREVAN STATE UNIVERSITY	Armenia	STOCKHOLM UNIVERSITY	Sweden	23-09-2012	15-03-2013	Applications of Clifford Algebra in General Relativity and Quantum Field Theory	
<b>Total for GALSTYAN, IRINA : 2</b>											
GOMES DE OLIVEIRA	FERNANDA	F	Brazilian	INSTITUTO TECNOLÓGICO DE AERONÁUTICA	Brazil	UNIVERSITE D E NICE - SOPHIA ANTIPOLI	France	03-09-2012	22-09-2012	Induced gravitational collapse. GRB-NS connection	
GOMES DE OLIVEIRA	FERNANDA	F	Brazilian	INSTITUTO TECNOLÓGICO DE AERONÁUTICA	Brazil	SAPIENZA - UNIVERSITA DI ROMA	Italy	23-09-2012	15-03-2013	Induced gravitational collapse. GRB-NS connection	29100.00



Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date	
<b>Total for GOMES DE OLIVEIRA, FERNANDA : 2</b>										
KHORRAMI	ZEINAB	F	Iranian	IASBS UNIVERSITY	Iran	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	03-09-2012	22-09-2012	Central core physics and kinematics of the massive starburst region R136 in 30 Doradus using VLTI
KHORRAMI	ZEINAB	F	Iranian	IASBS UNIVERSITY	Iran	OBSERVATOIRE DE LA CÔTE D'AZUR	France	23-09-2012	15-03-2013	Central core physics and kinematics of the massive starburst region R136 in 30 Doradus using VLTI
<b>Total for KHORRAMI, ZEINAB : 2</b>										
SAWANT	DISHA	F	Indian	MUMBAI UNIVERSITY	India	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	03-09-2012	22-09-2012	Cosmology with Gamma-Ray Bursts
SAWANT	DISHA	F	Indian	MUMBAI UNIVERSITY	India	UNIVERSITÀ DI FERRARA	Italy	23-09-2012	15-03-2013	Cosmology with Gamma-Ray Bursts
<b>Total for SAWANT, DISHA : 2</b>										
<b>Total for Category A: 12 mobilities by 5 Doctoral Candidates</b>										
<b>DOCTORAL CANDIDATES - CATEGORY B</b>										
ENDERLI	MAXIME	M	French	ROYAL INSTITUTE OF TECHNOLOGY	Sweden	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	03-09-2012	22-09-2012	Gamma-ray bursts and cosmological structures
ENDERLI	MAXIME	M	French	ROYAL INSTITUTE OF TECHNOLOGY	Sweden	SAPIENZA - U NIVERSITÀ DI ROMA	Italy	23-09-2012	15-03-2013	Gamma-ray bursts and cosmological structures
<b>Total for ENDERLI, MAXIME : 2</b>										
LUDWIG	HENDRIK	M	German	FREIE UNIVERSITÄT ERLIN	Germany	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	03-09-2012	22-09-2012	Discrete and Fractal Cosmologies
LUDWIG	HENDRIK	M	German	FREIE UNIVERSITÄT ERLIN	Germany	SAPIENZA - U NIVERSITÀ DI ROMA	Italy	23-09-2012	15-03-2013	Discrete and Fractal Cosmologies
<b>Total for LUDWIG, HENDRIK : 2</b>										
STROBEL	ECKHARD	M	German	UNIVERSITY OF ERLA NGEN-NURNBERG	Germany	UNIVERSITE D E NICE - SOP HIA ANTIPOLI	France	03-09-2012	22-09-2012	Critical and Overcritical Electromagnetic Fields
STROBEL	ECKHARD	M	German	UNIVERSITY OF ERLA NGEN-NURNBERG	Germany	SAPIENZA - U NIVERSITÀ DI ROMA	Italy	23-09-2012	15-03-2013	Critical and Overcritical Electromagnetic Fields
<b>Total for STROBEL, ECKHARD : 2</b>										
<b>Total for Category B: 6 mobilities by 3 Doctoral Candidates</b>										
<b>DOCTORAL CANDIDATES - WESTERN BALKANS AND TURKEY WINDOW</b>										
BARDHO	ONELDA	F	Albanian	UNIVERSITY OF TIRA NA	Albania	OBSERVATOIRE DE LA CÔTE D'AZUR	France	01-02-2013	15-03-2013	Astrophysics of Gamma-Ray Bursts and Supermassive

Family Name	First Name	Gender	Nationality	Institution / University of origin	Country	Host institution/ University	Country	Mobility Start Date	Mobility End Date
Total for <b>BARDHO, ONELDA</b> : 1									
<b>Total for Western Balkans and Turkey Window: 1 mobilities by 1 Doctoral Candidates</b>									
<b>Total of 19 mobilities by 9 Doctoral Candidates</b>									
<b>Global Total: 19 mobilities for 9 persons</b>									

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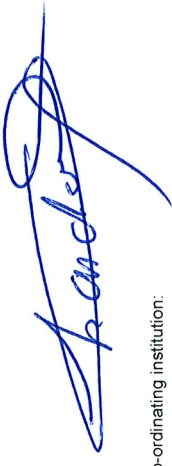
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Date (day/month/year):

15/03/2013

Name of the coordinator: Pascal CHARDONNET

Signature:



Stamp of the co-ordinating institution: