

the International Relativistic Astrophysics Ph.D. Erasmus Mundus Joint Doctorate Program

IRAP PhD

Following the successful scientific space missions by the European Space Agency (ESA) and the European Southern Observatory (ESO) in Chile, as well as the high energy particle activities at CERN in Genève, we have initiated a Ph.D. programme dedicated to create a pool of scientists in the field of relativistic astrophysics. After taking full advantage of the observational and experimental facilities mentioned above, the students of our programme are expected to lead the theoretical developments of one of the most active fields of research: relativistic astrophysics.

This program provides expertise in the most advanced topics of mathematical and theoretical physics, and in relativistic field theories, in the context of astronomy, astrophysics and cosmology. It provides the ability to model the observational data received from the above laboratories. This activity is necessarily international as no single university can have a scientific expertise in such a broad range of fields.

We announce two calls: one with a deadline on 28 February 2011, sponsored by Erasmus Mundus, and the other with a deadline on 30 September 2011. The Erasmus Mundus program has a very competitive salary as well as comprehensive benefits.

The Institutions participating in the IRAP PhD are: the international organization ICRANet as coordinating institution and the University of Nice Sophia Antipolis as the host Institution; the Albert Einstein Institute, Potsdam; the Brazilian Center for Physics Research (CBPF) and ICRA Brasil; the Free University of Berlin; Indian Centre for Space Physics, Kolkata; Observatoire de la Côte d'Azur, Nice; Shanghai Astronomical Observatory, China; University of Ferrara, Italy; University of Rome, la Sapienza, Italy; University of Savoie, Annecy, France; University of Stockholm, Sweden, Tartu Observatory, Estonia. The Final Ph.D. degree will be jointly delivered by the Academic Institutions participating in the program.

We encourage applications from the most qualified and motivated candidates worldwide, independent of nationality, gender or background.

The Courses: Each student will have to follow 180 hours of courses during the three years of the Ph.D. program. There is also a possibility to follow courses from other Physics, Mathematics, Astronomy and Astrophysics Ph.D. programs in each participating institution, after approval by the Faculty. Courses can be chosen from the following list:

VERY HIGH ENERGY PHENOMENA IN ASTROPHYSICS

Felix AHARONIAN
Dublin Institute for Advanced Studies and Max Planck Institute für Kernphysik

COSMOLOGICAL SINGULARITY

Vladimir BELINSKI - ICRANet

RELATIVISTIC EFFECTS IN ASTROPHYSICS

Carlo Luciano BIANCO
SAPIENZA Università di Roma and ICRANet

OBSERVERS AND OBSERVABLES IN BLACK HOLE SPACETIMES

Donato BINI - CNR and ICRANet

ACCRETIONS ON BLACK HOLES

Sandip Kumar CHAKRABARTI
S.N. Bose National Centre and Indian Centre for Space Physics

PARTICLE PHYSICS APPLIED TO ASTROPHYSICS

Pascal CHARDONNET
University of Savoie and ICRANet

GENERAL RELATIVITY

Thibault DAMOUR
IHES and ICRANet

SUPERNOVAE AND GRBS

Massimo DELLA VALLE
Osservatorio Astronomico di Capodimonte and ICRANet

LARGE SCALE STRUCTURE

Jaan EINASTO
Tartu Observatory and ICRANet

TOPICS IN COSMOLOGY AND PARTICLE ASTROPHYSICS

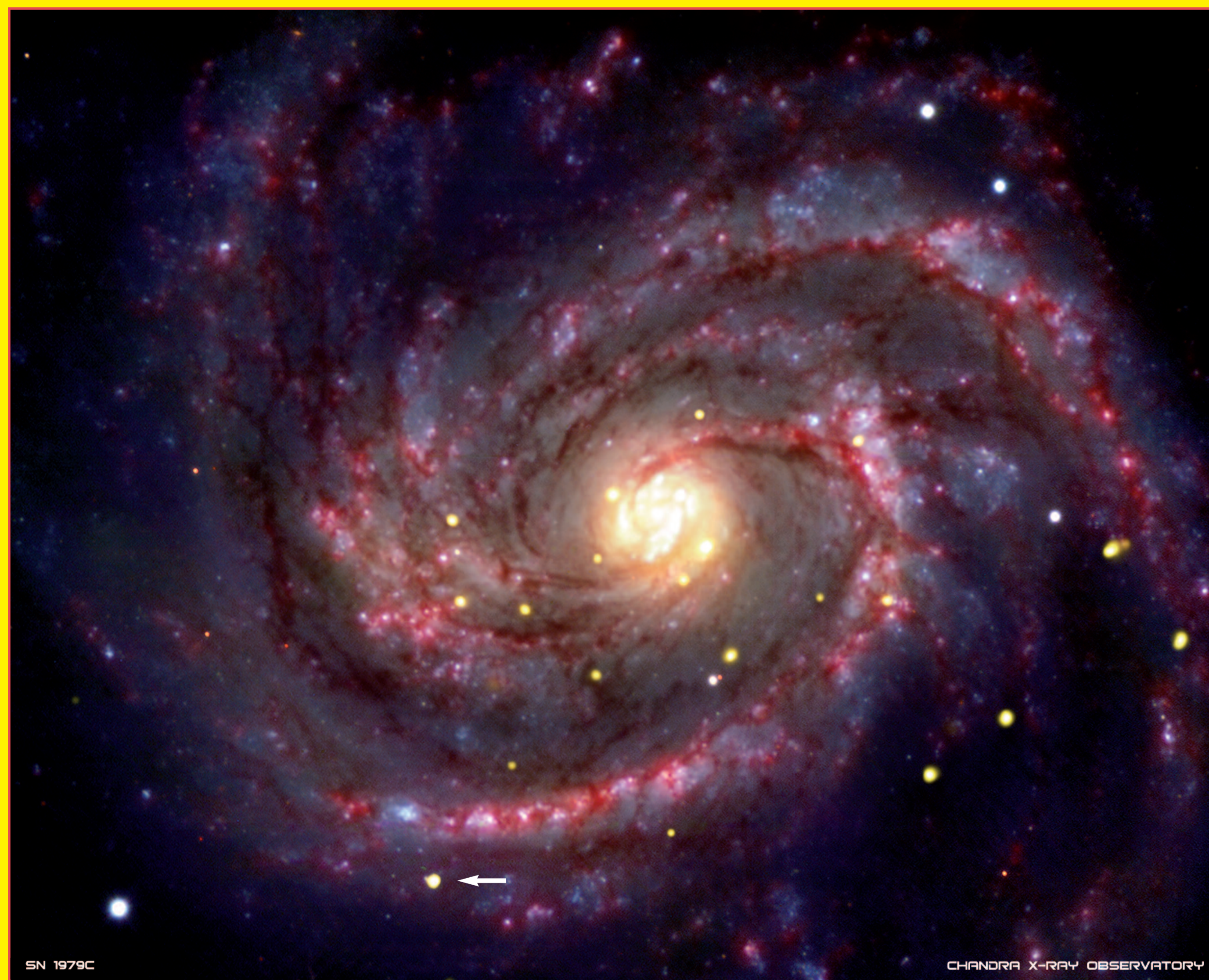
Li Zhi FANG
University of Arizona and ICRANet

X/GAMMA-RAY INSTRUMENTATION

Filippo FRONTERA
University of Ferrara

HIGH ENERGY ASTROPHYSICS: X-RAYS CLUSTERS

Riccardo GIACCONI
ICRANet



OBSERVATIONS OF GAMMA-RAY BURSTS
Cristiano GUIDORZI
University of Ferrara

FORMATION OF GALAXIES
Yipeng JING - Shanghai Observatory

ON THE KERR SOLUTION
Roy KERR - ICRANet

RELATIVISTIC FIELD THEORY
Hagen KLEINERT
Freie Universität Berlin and ICRANet

HOLOGRAPHY, ENTROPIC GRAVITY AND COSMOLOGY
Li MIAO - Academia Sinica Beijing

BOUNCING COSMOLOGY
Mario NOVELLO
CBPF Brazil and ICRANet

BKL COSMOLOGY AND HIDDEN SYMMETRIES IN GRAVITY
Hermann NICOLAI
Max-Planck-Institut für Gravitationsphysik (Albert Einstein Institut)

THE HIGH-ENERGY GAMMA-RAY UNIVERSE
Marco TAVANI
INAF-IASF Roma and Università di Roma "Tor Vergata"

SPECTRAL TIMING FROM BLACK HOLE SOURCES
Lev TITARCHUK - University of Ferrara

SINGULARITIES AND GENERAL RELATIVITY
Kjell ROSQUIST
Stockholm University

BLACK HOLES AND FUNDAMENTAL PHYSICS
Remo RUFFINI
SAPIENZA Università di Roma and ICRANet

RELATIVISTIC KINETIC THEORY
Gregory VERESHCHAGIN
SAPIENZA Università di Roma and ICRANet

STRONG COUPLING QED AND ELECTRON-POSITRON PLASMA
She-Sheng XUE
SAPIENZA Università di Roma and ICRANet

The Faculty
Giovanni Amelino-Camelia
SAPIENZA Università di Roma
Vladimir Belinski
SAPIENZA Università di Roma and ICRANet
Carlo Luciano Bianco
SAPIENZA Università di Roma and ICRANet
Donato Bini
CNR - Istit. per Applicaz. del Calcolo "M. Picone"
Sandip Kumar Chakrabarti
Indian Centre For Space Physics, India
Pascal Chardonnet (Erasmus Mundus Coordinator)
Université de Savoie
Christian Cherubini
Università "Campus Biomedico" di Roma
Pierre Couillet
Université de Nice - Sophie Antipolis
Thibault Damour
IHES, Bures-sur-Yvette
Jaan Einasto
Tartu Observatory
Simonetta Filippi
Univ. "Campus Biomedico" di Roma and ICRANet
Sergio Frasca
SAPIENZA Università di Roma
Filippo Frontera
Università di Ferrara
Yipeng Jing
Shanghai Astronomical Observatory, China
Hagen Kleinert
Freie Universität Berlin
Gian Luca Lippi
Université de Nice Sophia-Antipolis
Francois Mignard
Observatoire de la Côte d'Azur
Hermann Nicolai
Max Planck Inst. for Gravitational Physics, Potsdam
Mario Novello
Brazilian Centre For Physics Research, Brazil
José Pacheco
Observatoire de la Côte d'Azur
Kjell Rosquist
Stockholm University
Remo Ruffini (Director)
SAPIENZA Università di Roma and ICRANet
Farrokh Vakili
Observatoire de la Côte d'Azur
Gregory Vereshchagin
SAPIENZA Università di Roma and ICRANet
Xue She Sheng
SAPIENZA Università di Roma and ICRANet

The Host Institution for the call of 2011-2012 is the Université de Nice-Sophia Antipolis; Grand Château 28 Avenue Valrose 21 B.P. 2135 - 06103 NICE CEDEX 2

Applications and Fellowships:
In 2011-2012, nine positions will be available.
In the call of February 28, 2011, within the ERASMUS MUNDUS program, full economical support is provided. See <http://www.irap-phd.org>

In the call of September 30, 2011 nine additional fellowships will be available: six with full financial support.
See <http://www.icra.it> and <http://www.icranet.org>

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