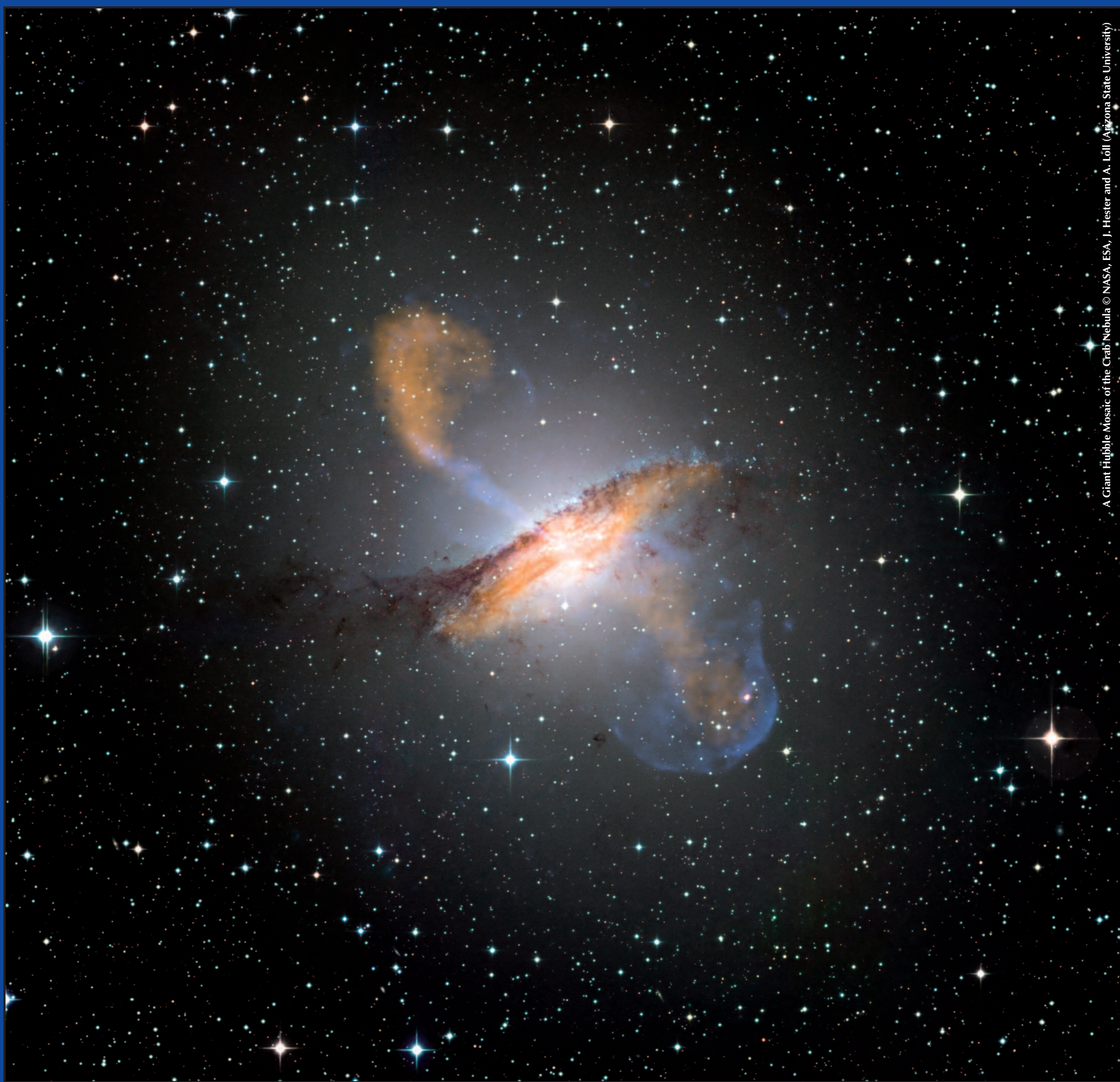


the International Relativistic Astrophysics Ph.D.

IRAP PhD

INVITATION FOR APPLICANTS 2009

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 created a Ph.D. program dedicated to the formation of scientists in the field of relativistic astrophysics. The students of such a program will lead the theoretical developments of one of the most active fields of research, based on the above observational and experimental facilities. This program needs expertise in the most advanced topics of mathematical and theoretical physics, and in relativistic field theories. It requires the ability to model the observational data received from the above facilities, as well as all the basic knowledge in astronomy, astrophysics and cosmology. This activity is necessarily international, no single university can cover the broad expertises. From this, the proposed program of the IRAP Ph.D., in one of the youngest and most dynamical French universities, pole of research and teaching in the Euro-Mediterranean region (PRES): the University of Nice. It benefits from the presence of the astrophysics research institute of Observatoire de la Côte d'Azur involved in relativistic and non-photonic astrophysics as well as the presence of Tartu Observatory. The participation of the Freie Universität Berlin and of the Einstein Institute in Potsdam offers the possibility of teaching in relativistic field theories at the highest level. The University of Savoie offers the link to the particle physics at CERN. The activities at the University of Rome, at Stockholm University and at ICRANet offer teaching programs in all the fields of relativistic astrophysics, including cosmology, the physics of gravitational collapse, gamma-ray bursts, and black hole physics. Finally, the University of Ferrara will be present with lectures and researches in the topics they have pioneered such as X-ray astrophysics and observational cosmology. Through ICRANet the extra-European connections with Brazil, China and India will be guaranteed: in China, with the Shanghai Observatory of the Chinese Academy of Science, studying the formation and evolution of large-scale structure and galaxies; in India, with the Indian Centre for Space Physics (ICSP), renowned for its research on compact objects as well as on solar physics and astrochemistry; in Brazil, with ICRA-BR at CBPF, where a successful program of research and teaching in relativistic astrophysics has been established in recent years.



A Giant Hubble Mosaic of the Crab Nebula © NASA, ESA, J. Hester and A. Loll (Arizona State University)

The Courses – Each student will have to follow 180 hours of courses during the three years of the Ph.D. program. There is also the possibility to follow courses from the 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:

CORE LECTURES

ULTRA HIGH ENERGY GAMMA RAY SOURCES
Felix AHARONIAN (ICRANet & Max Planck)

THE APPROACH TO THE SINGULARITY
Vladimir BELINSKI (ICRANet)

RELATIVISTIC EFFECTS IN GRBS
Carlo BIANCO (ICRANet)

ACCRETIONS ON BLACK HOLES AND NEUTRONS STARS
Sandip CHAKRABARTI (Indian Centre for Space Physics)

PARTICLE PHYSICS APPLIED TO ASTROPHYSICS
Pascal CHARDONNET (Savoie University)

EXOBIOLGY
Sandip CHAKRABARTI (Indian Centre for Space Physics)

GENERAL RELATIVITY
Thibault DAMOUR (ICRANet & IHES)

LARGE SCALE STRUCTURE OF THE UNIVERSE
Jaan EINASTO (ICRANet & Tartu Observatory)

SIGNAL TREATMENT
Andrea FERRARI (Nice University)

X-RAYS AND GAMMA RAYS ASTRONOMY
Filippo FRONTERA (Ferrara University)

X RAYS CLUSTERS
Riccardo GIACCONI (ICRANet)

PLANETOLOGY

Tristan GUILLOT (Observatoire de la Côte d'Azur)

FORMATION OF GALAXIES
Ypeng JING (Shanghai Observatory)

ON THE KERR SOLUTION
Roy KERR (ICRANet)

RELATIVISTIC FIELD THEORY
Hagen KLEINERT (Freie Universität Berlin)

PLANETOLOGY
Alessandro MORBIDELLI (Observ. de la Côte d'Azur)

DEVELOPMENT ON BKL WORK
Hermann NICOLAI (Einstein Institute Potsdam)

NON SINGULAR COSMOLOGY
Mario NOVELLO (CBPF Brazil)

EXTRAGALACTIC ASTROPHYSICS
José PACHECO (Observatoire de la Côte d'Azur)

GRAVITATIONAL WAVES
Tania REGIMBAU (Observatoire de la Côte d'Azur)

SINGULARITIES AND GENERAL RELATIVITY
Kjell ROSQUIST (Stockholm University)

BLACK HOLES AND FUNDAMENTAL PHYSICS

Remo RUFFINI (ICRANet & Roma La Sapienza)

THERMALIZATION AND COLLECTIVE EFFECTS
Gregory VERESHACING (ICRANet)

GRAVITATIONAL WAVES
Jean-Yves VINET (Observatoire de la Côte d'Azur)

ULTRA RELATIVISTIC ELECTRON POSITRON PLASMA
She-Sheng XUE (ICRANet)

The Host Institution for the call of 2009-2010
is the Université de Nice Sophia Antipolis Grand Château 28 Avenue Valrose 21 - B.P. 2135 06103 NICE CEDEX 2

Applications and Fellowship:
In 2009-2010 ten positions will be available, six with fellowship support. The application deadline is September 15, 2009. See <http://www.icra.it> and <http://www.icranet.org>

Information:
Berti Armida
tel.+390649914254
e-mail: secretariat-irapphd@icra.it

The Faculty

Giovanni Amelino-Camelia
SAPIENZA Università di Roma
Jean Arnaud
Université de Nice-Sophia Antipolis
Carlo Luciano Bianco
SAPIENZA Università di Roma e ICRANet
Donato Bini
CNR - Istit. per Applicaz. del Calcolo "M. Picone"
Pascal Chardonnet
Université de Savoie
Christian Cherubini
Università "Campus Biomedico" di Roma
Demetrios Christodoulou
ETH Zurich
Jacques Colin
Observatoire de la Côte d'Azur
Pierre Couillet
Université de Nice-Sophie Antipolis
Thibault Damour
IHES Bures-sur-Yvette
Carlo Di Castro
SAPIENZA Università di Roma
Simonetta Filippi
Univ. "Campus Biomedico" di Roma e ICRANet
Sergio Frasca
SAPIENZA Università di Roma
Filippo Frontera
Università di Ferrara
Hagen Kleinert
Freie Universität Berlin
Gian Luca Lippi
Université de Nice Sophia Antipolis
François Mignard
Observatoire de la Côte d'Azur
Giovanni Montani
ENEA e ICRANet
José Pacheco
Observatoire de la Côte d'Azur
Remo Ruffini (Director)
SAPIENZA Università di Roma e ICRANet
Xue She Sheng
ICRANet



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