

# the International Relativistic Astrophysics Ph.D. Erasmus Mundus Join Doctorate Program

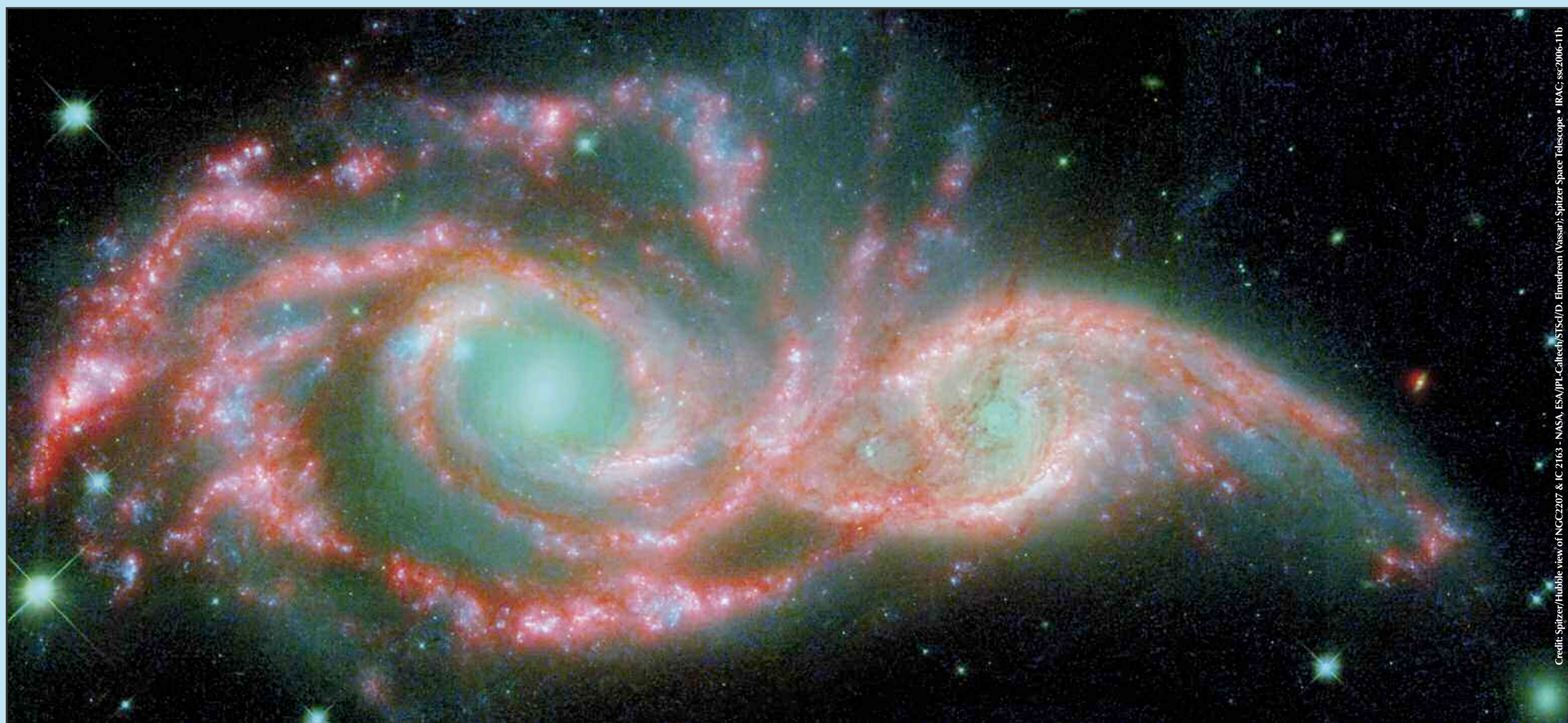
IRAP PhD

The IRAP Ph.D. program, sponsored by Erasmus Mundus, is dedicated to the formation of scientists in the field of relativistic astrophysics. The successful scientific space missions by the European Space Agency (ESA), the Very Large telescope of the European Southern Observatory (ESO) in Chile, as well as the high-energy particle activities at CERN in Geneva have created the basis for a vigorous development of the field of relativistic astrophysics. This has become one of the most active fields of current research.

This program provides expertise in the most advanced topics of mathematical and theoretical physics, including relativistic field theories, in the context of astronomy, astrophysics and cosmology. This activity is necessarily international – no single university can cover this broad scientific scope.

The first three-year program cycle starts in 2010 at the University of Nice Sophia Antipolis. It benefits from the presence of the astrophysics research institute of the Observatoire de la Côte d'Azur. The coordination of the IRAP Ph.D. will take place at the Center of ICRANet at Villa Ratti, close to the university campus. The Freie Universität Berlin and the Einstein Institute in Potsdam contribute with teaching in relativistic field theories. The University of Savoie connects to the particle physics at CERN. The activities at the University of Rome, at Stockholm University and at ICRA and ICRANet offer teaching programs in all fields of relativistic astrophysics, including cosmology, the physics of gravitational collapse, gamma-ray bursts, and black hole physics. The University of Ferrara takes part with lectures and research in observational astronomy and development of space missions. In addition, the students can follow graduate courses at all the participating institutions.

Through ICRANet the extra-European connections with Brazil, China and India will be guaranteed: with China via the Shanghai Observatory of the Chinese Academy of Science, with India via the Indian Centre for Space Physics in Kolkata and with Brazil via the Rio de Janeiro branch of ICRANet.



Credit: Spitzer/Hubble view of NGC2207 & IC 2163 - NASA, ESA/JPL-Caltech/STScI/D. Elmudreen (Vassar); Spitzer Space Telescope • IRAC: ssc2006-11b

## GENERAL RELATIVITY

### ADVANCED GENERAL RELATIVITY

### RELATIVISTIC FIELD THEORY

### PARTICLE PHYSICS APPLIED TO ASTROPHYSICS

### SINGULARITIES IN GENERAL RELATIVITY

### ROTATING AND ELECTROMAGNETIC BLACK HOLES

### GRAVITATIONAL WAVES

### BLACK HOLES AND FUNDAMENTAL PHYSICS

### ACCRETION ON BLACK HOLES AND NEUTRONS STARS

### X-RAY AND GAMMA RAY ASTRONOMY

### ULTRA RELATIVISTIC ELECTRON POSITRON PLASMA

### RELATIVISTIC EFFECTS IN GAMMA RAY BURSTS

### SUPERNOVAE

### ULTRA HIGH ENERGY GAMMA RAY SOURCES

### FORMATION OF GALAXIES

### EXTRAGALACTIC ASTROPHYSICS

### LARGE SCALE STRUCTURE OF THE UNIVERSE

### NON-SINGULAR COSMOLOGY

### SIGNAL TREATMENT IN ASTROPHYSICS

### PLANETOLOGY

### EXO BIOLOGY

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The IRAP PhD Erasmus Mundus program offers 10 grants of 3 years starting September 1, 2010

**Deadline for Application:**  
February 28, 2010

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