

ICRANet Scientific Committee
Sixth Meeting
December 19th - 20th, 2011

The meeting starts at 9:00 am of the 19th of December 2011 in the AUI Headquarter in Washington, DC (USA). The following members are present:

Carlo Luciano Bianco (Representative of ICRA)
João Braga (Representative of Brazil)
Riccardo Giacconi (Representative of Italy, Chairman)
Robert Jantzen with proxy by Gabriele Gionti (Representative of the Vatican State)
John Mester (Representative of Stanford University, Co-Chairman)
Remo Ruffini (Director of ICRANet)

Also in attendance:
Federica Di Berardino (Head of ICRANet Secretariat)

The meeting is chaired by Prof. Riccardo Giacconi and the minutes are taken by the Director.

The Director presents the three volumes of his report to the Committee.

The presentation of the report by the Director starts at 9am. The Director specifically illustrates:

- the status of the Staff, visiting scientists and graduate students at the Pescara Center;
- the Major role that Brazil is acquiring in the ICRANet activities; as examples, he illustrates three major points: a) the constitution of the ICRANet Faculty in Brazil, b) the creation of the Brazilian Science Data Center (BSDC), and c) the Cesare Lattes program for exchange of Scientists;
- the completion of restructuring of the ICRANet seat in Nice: Villa Ratti;
- the teaching activities held in March in Pescara, in April and in October in Les Houches, in May, June and September in Nice, in September in Ferrara, as well as the 12th Italian-Korean Symposium held in Pescara in July and the 3rd Galileo Xu-GuangQi meeting held in Beijing in October;
- the new and pre-existent Agreements with the BSU (Belarusian State University) in Minsk, the CBPF (Centro Brasileiro de Pesquisas Físicas, Brazilian Center for Physics Research) in Brazil, the Ceará State in Brazil, the ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development), the GARR (Italian Network for University and Research) in Italy, the ICTP (Abdus Salam International Center for Theoretical Physics), the IHEP (Institute for High Energy Physics, China), the INFN (National Institute of Nuclear Physics), the ITA (Instituto Tecnológico de Aeronáutica, Technological Institute of Aeronautics, Brazil) the LeCosPa in Taiwan, the NAS RA (National Academy of Science of the Republic of Armenia), the University of Nice-Sophia Antipolis, the Pescara University “D’Annunzio” in Italy, the University of Rome “Sapienza”, the State University of Rio de Janeiro (Universidade do Estado do Rio de Janeiro, UERJ);
- the large number of Students and the growth of the International Relativistic Astrophysics PhD Program (IRAP PhD), promoted by ICRANet with the academic support of the University of Rome “Sapienza”, the University of Ferrara, the University of Nice Sophia-Antipolis, the Freie Universitaet of Berlin, the University of Savoy, the Institut des Hautes Etudes Scientifiques, the Observatoire de la Côte d’Azur and the recently three adjoint Institutes: the Tartu Observatory, the Albert Einstein Institute in Potsdam and the University of Stockholm;

- that the IRAP PhD has grown and obtained the official recognition of the Erasmus Mundus program of the European Commission and has seen the registration of nineteen additional students within this new framework. In this new extended activity it has been involved also the Indian Center for Space Physics (India) and the Shanghai Astronomical Observatory (China);
- the project for the ICRANet Center at the Casino de Urca in Rio de Janeiro (Brazil).

The scientific activities of ICRANet have been presented on selected topics:

J.A. Rueda *From Nuclei to Compact Stars*

R. Negreiros *The first glimpse of young Neutron Stars*

C.L. Bianco *Gamma-Ray Bursts*

L. Izzo *Introducing the proto-Black Hole*

M. Muccino *Genuine short GRBs*

V. Belinski *Exact Solutions of Einstein and Einstein-Maxwell equations*

J. Einasto *Report of the activity of the Tartu cosmology group in 2011*

S. Filippi-C. Cherubini *Interdisciplinary theoretical physics*

D. Bini *Symmetries in General Relativity*

G. Vereshchagin *Annual report from the Theoretical Astroparticle Physics group*

A. Benedetti *Creation and evolution of the pair plasma in strong electric field*

I Siutsou *Research activity report*

D. Begue *Relativistic hydrodynamics applied to the study of the photosphere of GRBs: a numerical approach*

S.S. Xue *e^+e^- pairs production and evolution in gravitational collapses*

F. Aharonian *Activity report 2011*

P. Giommi *On the establishment of a Brazilian Science Data Center (BSDC)*

A. Baranov *Pair instability supernovae*

P. Chardonnet *Report on the Erasmus Mundus IRAP PhD program*

The Committee:

- thanks the Director for his presentation and congratulates him for the clear scientific success and achievements of ICRANet accomplished under his leadership;
- recognizes the ample expansion of topics of Scientific Research at the highest international levels and the many results obtained; particularly important are the developments in the traditional fields of research, such as the Physics and Astrophysics of Neutron Stars and Black Holes, as well as the mathematical foundations of the Solutions of Einstein-Maxwell Equations;
- records as well a new promising opening of scientific interests in the field of high redshift cosmology and the large scale structure of the Universe; equally important is the progress toward field theories in extreme relativistic conditions made possible by the confrontation with data from X and Gamma ray satellites and Earth-based observatories in all wavelengths from the optical to the UHE gamma rays;
- recognizes the contributions of the Governments of Armenia, Brazil, Italy and Vatican State, as well as from Stanford University, the University of Arizona at Tucson, and ICRA for the creation of ICRANet as an international organization, operating in one of the most advanced fields of research, and is also grateful to the Italian government for granting the extraterritorial Status to the Seat in Pescara;
- witnesses the widening of scientific interest made possible by the geographical expansion of the ICRANet activities in Armenia, Brazil, China, France; it welcomes

the action by the Director to obtain funding, local premises and support of the local Authorities, which adds a substantial increase to the assets of ICRANet;

- recognizes the strategic value of the activities in Brazil with the development in the ICRANet Center in Rio of the BSDC (Brazilian Science Data Center), specially devoted to the acquisition, storage, classification and analysis of astrophysical data;
- welcomes as well the signature of the agreement with ITA and encourages the signature of an agreement with INPE (Instituto Nacional de Pesquisas Espaciais), especially in view of the Italian collaboration with Brazil for the development of astrophysical satellites like e.g. MIRAX;
- expresses gratitude for the project of installing the Brazilian ICRANet Center at the Casino de Urca and expresses the strongest support to the Ministry of Science in Brazil to realize such a project in the near future;
- is pleased about the full enforcement of the Seat agreement for the Pescara Center unanimously approved by the Italian Parliament, and recommends that similar actions will be made in order to obtain the same status in the territories hosting the other Seats of ICRANet, especially the ones in Rio de Janeiro and in Yerevan;
- asks the Director to address the attention of the Italian Foreign Minister on obtaining the Seat agreement for the Center in Villa Ratti in Nice; this should be possible through an action by the European Community; the entrance of France in ICRANet should be also considered with high priority in view of the many common scientific interests with ICRANet;
- underlines the activities in the organization of international meetings: especially remarkable has been the 3rd Galileo-Xu GuangQi Meeting in Beijing (China) and the program of biannual meetings between Italy and Korea sponsored by the Italian Foreign Ministry, as well as all the many PhD schools organized in Italy and in France;
- recognizes the strong commitment of teaching at graduate-student level, promoted by ICRANet in establishing the IRAP PhD in connection with some of the leading Astrophysical and Physical research Institutions of Europe, directly related to the activities encouraged by ICRANet in Brazil, China and India. Particularly significant are the presence of AEI – Albert Einstein Institute – Potsdam (Germany), Berlin Free University (Germany), CBPF –Brazilian Centre for Physics Research (Brazil), Ferrara University (Italy), IHES – Institut des Hautes Études Scientifiques (France), Indian Centre for Space Physics (India), Nice University Sophia Antipolis (France), Observatory of the Côte d'Azur (France), “Sapienza” University of Rome (Italy), Savoie University (France), Shanghai Astronomical Observatory (China), Stockholm University (Sweden), Tartu Observatory (Estonia); it should be noted that such a PhD program is the only one in Physics and Astrophysics to receive the sponsorship of the Erasmus Mundus program of the European Commission and that it recruited up to now nineteen additional graduate students within such a framework;
- recognizes that, in order to keep pace with these scientific developments and with its scientific goals, as well as with the teaching to a vast number of IRAP PhD students all over the world, an expansion of the Faculty, visitors and research Members, both in Europe and in Brazil, is necessary and advises the Director to open new appointments;

The Director notes:

- the contributions obtained in kind for the ICRANet Centers by the Municipalities of Pescara and Nice, by the CBPF in Rio de Janeiro, and by the Academy of Science of Armenia in Yerevan;
- the support given by the Erasmus Mundus program of the European Commission to the IRAP PhD program;
- the increase of international activities in Brazil, China, France;
- the first contribution given by the Brazilian Government expected in 2011.

He further notes:

- that the contribution of the Italian Government has been kept constant since the beginning of the ICRANet activities started in 2005, not taking into account any effect of inflation;
- that the Board of ICRANet has unanimously reiterated a request for the increase of funding for the Italian contributions;
- that the request by the Italian Foreign Minister to the Italian Government of an increase of 700,000.00 Euros for the years 2011 and following has not been granted in view of the current economical difficulties;

In view of all the above very significant developments and commitments toward international partners in teaching and research, he will:

- have, with the representatives of Brazil in the ICRANet Board (Prof. Mario Novello) and in the Scientific Committee (Prof. João Braga), preparatory meetings in Brazil with representatives of the Ministries of Science and Technology, of Foreign Affairs, and of Planning, as well as with representatives of the scientific and technological community, in order to formulate their detailed proposal for the program of collaboration with Brazil, following the presentation in the current report, based on a contribution by Brazil for 1,566,000.00 Euros;
- have preparatory meetings with the representatives of the Italian Ministries of Foreign Affairs, of Treasury, and of University and Research in order to convey the unanimous and urgent request by all Members to guarantee the continuation of the current scientific activities, in view of the fact that no residual funds are any longer available in ICRANet; this common action of all Members should lead to a request to be discussed in the next Board meeting in February 2012 for an increase of the Italian annual contribution of 1,000,000.00 Euros for the years 2012 and following; all this also in view of the above mentioned yearly financial contribution of the European Community for the Erasmus Mundus program and the many contributions in kind and in funds offered by all Members.

In conclusion given the strength of the Organization, the Committee is pleased to comment on their results with the intent of driving for excellence:

- ▲ takes note of the great success of the ICRA/ICRANet group, led by its Director, in advancing in all the planned research topics and in accomplishing their goals,
- ▲ acknowledges the contributions by the Minister of Research of Italy for the continuous support of ICRA and the Italian government for the law establishing ICRANet and recognizes the great significance of the actions and financial support of the Italian Foreign Minister.

- ⤴ recognizes the great significance of the actions of the Minister of Foreign Affairs, the Minister of Science, the Minister of Planning of Brazil for their contributions, and looks forward to the realization of the ICRANet Center in Rio de Janeiro;
- ⤴ supports the Director on the establishment of a stronger and wider link with Brazil with specific plans for expansion of the facilities as well as of the Faculty, the Scientists and the Administrative Staff;
- ⤴ supports the development of the BSDC, which may become a corner stone for the activities of ICRANet in Brazil possibly to be extended to South and Latin America;
- ⤴ supports further contacts with China and fostering of the collaborations with India;
- ⤴ is particularly pleased by the ICRANet activities within the IRAP-PhD and the Erasmus Mundus Program, jointly with the Universities in the European Union and Brazil, Armenia, China and India; the arrival of nineteen young students has given new vitality to the scientific atmosphere in the Pescara Center and their participation in many of the scientific reports has been extremely encouraging;
- ⤴ notes with great satisfaction, in this difficult period for the development of research in science, the progress and consolidation of ICRANet scientific activities, successfully overcoming the current difficulties in funding;
- ⤴ unanimously endorses the above mentioned request by the Director, on behalf of all Members, for the increase of the Italian annual contribution due to the current needs of research and teaching activities;
- ⤴ finally recognizes the continuously improving tone and content of the scientific discussions and it must credit the Director, Prof. Remo Ruffini, and his staff with the creative follow up to its recommendations of last year.

The meeting ends at 12:00 pm on the December 20th 2011 after the reading and unanimous approval of this report.



Prof. Riccardo Giacconi
Chairman of the ICRANet Scientific Committee