

ICRANet Scientific Committee
Nineteenth Meeting (e-meeting)
January 31, 2022

The meeting starts at 10:30 AM via GoToMeeting: <https://global.gotomeeting.com/join/750192021>

The following members are present:

Prof. Mimoza Hafizi (Albania)
Prof. Narek Sahakyan (Armenia)
Prof. Manuel Malheiro (ad interim, Brazil)
Prof. Carlo Luciano Bianco (ICRA)
Prof. Massimo Della Valle (Italy, Chairman)
Prof. Remo Ruffini (Director of ICRANet)

The additional following persons are present:

Prof. Carlos Raul Arguelles (ICRANet Adjunct Professor)
Prof. Donato Bini (ICRANet Adjunct Professor)
Ms Sraeh Eslamzadeh Askestani (ICRANet)
Prof. Liang Li (ICRANet Faculty Professor)
Prof. Rahim Moradi (ICRANet Faculty Professor)
Ms Fatemeh Rastegar Nia (ICRANet)
Prof. Jorge A. Rueda H. (ICRANet Faculty Professor)
Prof. Soroush Shakeri (ICRANet Adjunct Professor)
Prof. Gregory Vereshchagin (ICRANet Faculty Professor)
Prof. She-Sheng Xue (ICRANet Faculty Professor)

Absents

Prof. Christopher Fryer (Arizona University)
Prof. John Mester (Stanford University)
Prof. Gabriele Gionti, S. J. (Vatican City State)

The meeting is chaired by the Director, Prof. Remo Ruffini, who also takes the minutes.

Prof. Remo Ruffini assumes the Chairmanship and presents the 2021 ICRANet scientific report to the Scientific Committee, in particular Volumes 2 and 3 which are composed as follows:

Volume 2

- Multiwavelength and Multimessenger emission from Active Galactic Nuclei (Prof. Narek Sahakyan).....pag. 1-110
- ICRANet-Minsk report (Prof. Gregory Vereshchagin).....pag. 111-128
- Gamma-Ray Bursts (Prof. Carlo Luciano Bianco).....pag. 129-368
- Theoretical Astroparticle Physics (Prof. Gregory Vereshchagin).....pag. 369-388
- Generalization of the Kerr-Newman solution (Prof. Hernando Quevedo).....pag. 389-480
- Cosmology Group of Tartu Observatory (Prof. Jaan Einasto).....pag. 481-498

- Black Holes and Quasars (Prof. Brian Punsly)..... pag. 443-444
- Electron-positron pairs in physics, astrophysics and cosmology (Prof. Shesheng Xue)...pag. 503-744

Volume 3

- From heavy nuclei to black holes (Prof. Shesheng Xue).....pag. 745-1090
- From Nuclei to Compact Stars (Prof. Jorge A. Rueda H.).....pag. 1091-1254
- Self-gravitating Systems of Dark Matter Particles (Prof. Carlos Raul Arguelles).....pag. 1255-1284
- Supernovae (Prof. Massimo Della Valle).....pag. 1285-1290
- Symmetries in General Relativity (Prof. Donato Bini).....pag. 1291-1402
- Self Gravitating Systems, Galactic Structures and Galactic Dynamics (Prof. Simonetta Filippi).....pag. 1403-1444
- Interdisciplinary Complex Systems (Prof. Christian Cherubini).....pag. 1445-1494

The Director then invites ICRA Net scientists to illustrate their respective fields of research:

- Prof. Narek Sahakyan, Director of ICRA Net Seat in Armenia, illustrates his scientific results on the topic “*Multiwavelength and Multimessenger emission from Active Galactic Nuclei*” on the main results and activities carried on in ICRA Net Seat in Armenia in 2021. In particular he mentioned the participation of his group in MAGIC collaboration resulting in large number of publications.
- The “*ICRA Net-Minsk report*” on page 111, presented by Prof. Gregory Vereshchagin, represents the summary of activities carried on in 2021 in the ICRA Net-Minsk center. He pointed out the importance of two new lecture courses developed by Dr. Mikalai Prakapenia, which are delivered to the students of the Belarusian State University.
- Dr. Liang Li and Dr. Rahim Moradi presents main highlights from their publications in the group “*Gamma-Ray Bursts*” focusing on the novel results from the Binary-driven Hypernova model.
- Prof. Gregory Vereshchagin presented the report on “*Theoretical Astroparticle Physics*”, with the novel results with verification of the relativistic kinetic code as well as analysis of the proposal of magnetic dominance in relativistic outflow of gamma-ray bursts.
- Prof. Remo Ruffini illustrates the main results in the topics “*Generalization of the Kerr-Newman solution*” edited by Fernando Quevedo, “*Cosmology Group of Tartu Observatory*” edited by Jaan Einasto and “*Black Holes and Quasars*” edited by Brian Punsly.
- Prof. Shesheng Xue illustrates the recent results on “*Electron-positron pairs in physics, astrophysics and cosmology: from heavy nuclei to black holes*”, with the emphasis on the works of the last year on the topic of H0 tension.
- Prof. Jorge A. Rueda H. reports on the topic “*From Nuclei to Compact Stars*”, with the main results on the theory of black holes and neutron stars applied to analysis of gamma-ray bursts within the Binary-driven Hypernova model.
- Prof. Carlos Arguelles presents his main results on the topic “*Self-gravitating Systems of Dark*

Matter Particles”, and mentions various press releases following the publication of the work of the group on the fermionic dark matter.

- Prof. Donato Bini reports on his results on the topic “*Symmetries in General Relativity*” focusing on the problem of calculation of gravitational radiation from black hole scattering problem.
- Prof. Ruffini thanks Prof. Simonetta Filippi for the report on “*Self Gravitating Systems, Galactic Structures and Galactic Dynamics*” and Prof. Christian Cherubini for his report on “*Interdisciplinary Complex Systems*”.
- Prof. Soroush Shakeri presents the report he prepared on “*ICRANet Isfahan activities*”.

The Director invites the participants to discuss Item 2 of the agenda “*Miscellaneous business*”.

Prof. Soroush Shakeri refers about a discussion he had with Prof. Habib Khosroshahi, Director of the Iranian National Observatory, which suggested to organize a joint meeting with ICRANet in the near future. The organization of this meeting will be of course supported also by ICRANet center in Isfahan as well as by the Isfahan University of Technology (IUT) and Institute for Research in Fundamental Sciences (IPM).

The Director agreed with great pleasure to that proposal, highlighting once again the longstanding and fruitful collaboration he has with the Islamic Republic of Iran and, in particular, with IUT.

The Director informs the Scientific Committee that in the next days they will open two calls for funding of scientific researches in Italy, one within the Piano Nazionale della Ricerca (PRN) initiative and one within the Progetti di Ricerca di Interesse Nazionale (PRIN) initiative. The Director will investigate the possibilities to apply for such calls also in collaboration with other research centers in Italy like ASI and/or Centro Fermi.

Prof. Jorge A. Rueda H. suggests to renew ICRA and ICRANet websites and think a new way to present the scientific results of the ICRANet group on it, in view of the many application that the Director would like to do for several projects.

The Director fully agrees with this proposal and kindly asks to some ICRA and ICRANet Faculty Professors to support ICRANet system manager in implementing these sections of ICRANet website.

The Scientific Committee unanimously approves the Report and warmly congratulates with the Director for the achievements of ICRANet in 2021.

The Director thanks all the participants and the meeting ends at 5 PM on January 31, 2022.

Prof. Mimoza Hafizi
Representative of Albania



Prof. Narek Sahakyan
Representative of Armenia



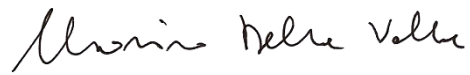
Prof. Manuel Malheiro
Representative of Brazil (ad interim)



Prof. Carlo Luciano Bianco
Representative of ICRA



Prof. Massimo Della Valle
Representative of Italy, Chairman



Prof. Jorge A. Rueda H. on behalf of Chris Fryer
Representative of the Arizona University



Prof. Remo Ruffini
Director of ICRA Net

