



PROF. REMO RUFFINI AND PROF. ROY PATRICK KERR PRESENT THE LATEST RESULTS OF ICRANET RESEARCH TO PROF. STEPHEN HAWKING IN CAMBRIDGE, ENGLAND, AT THE INSTITUTE DAMTP AND AT THE INSTITUTE OF ASTRONOMY OF THE UNIVERSITY OF CAMBRIDGE IN ENGLAND

Professor Remo Ruffini, Director of ICRANet, and Professor Roy Patrick Kerr, the discoverer of the world famous "Black Hole Kerr metric" and appointed professor "Yevgeny Mikhajlovic Lifshitz - ICRANet Chair", have had a 4 days intensive meeting at the University of Cambridge, both at DAMTP and at the Institute of Astronomy, with Professor Stephen Hawking (see photos: 1, 2 e 3) and the resident scientists: they illustrated recent progress made by scientists of ICRANet. The presentation, can be seen on www.icranet.org/documents/Ruffini-Cambridge2017.pdf, includes:

- GRB 081024B and GRB 140402A: two additional short GRBs from binary neutron star mergers, by Y. Aimuratov, R. Ruffini, M. Muccino, et al.; Ap.J in press.

This ICRANet activity presents the evidence of two new short gamma-ray bursts (S-GRBs) from the mergers of neutron stars binaries forming a Kerr black hole. The existence of a common GeV emission precisely following the black hole formation has been presented. Yerlan Aimuratov is a young scientist from the ICRANet associated University in Almaty Kazakistan. A free-available version of the article can be found on: <https://arXiv.org/abs/1704.08179>

- X-ray Flares in Early Gamma-ray Burst Afterglow, by R. Ruffini, Y. Wang, Y. Aimuratov, et al.; Ap.J submitted.

This work analyses the early X-ray flares, followed by a "plateau" and then by the late decay of the X-ray afterglow, ("flare-plateau-afterglow phase") observed by Swift-XRT. It is shown that only binary-driven hypernovae (BdHNe), long-GRBs generated by the explosion of a Supernova with a close binary neutron star companion generates such flares. The nature of the flares is identified by the collision of the GRB emitted by the formation of a Black hole with the supernova ejecta. Particular important has been the contribution of a young Chinese ICRANet scientist: Wang Yu. A free-available version of the article can be found on: <https://arXiv.org/abs/1704.03821>

- On the induced gravitational collapse scenario of gamma-ray bursts associated with supernovae , by L. Becerra, C. L. Bianco, C. L. Fryer, J. A. Rueda, R. Ruffini; Ap.J. 833 (2016) 107.

This work presents the most advanced numerical simulations of the induced gravitational collapse (IGC) model of long-GRBs associated with type Ib/c supernovae, named BdHNe. Particularly important has been the contribution of a young ICRANet scientist from the ICRANet associated University in Santander Colombia, also collaborating with the Los Alamos National Laboratory: Laura Becerra. A free-available version of the article can be found on: <https://arXiv.org/abs/1606.02523>

- Strong-field gravitational-wave emission in Schwarzschild and Kerr geometries: some general consideration, J. F. Rodriguez, J. A. Rueda, R. Ruffini.

In this work there are presented the latest results possibly necessary to the interpretations of Ligo-Virgo observations. A free-available version of the article can be found on: <http://arxiv.org/abs/1706.06440>

INFO:

Tel 085 23054200; stampa@icranet.org



The activities have continued on Tuesday at Prof. S. Hawking's home, where both Prof. Ruffini and Prof. Kerr have been invited for dinner (see photo 4).

On Wednesday and Thursday additional meetings and a joint seminar (see photo 5) for the Mathematics and Astronomy departments has been held at DAMTP of the University of Cambridge respectively on "Black Holes", by Prof. Roy P. Kerr, and on "The Moment of formation of a Black Hole in Gamma-Ray Bursts" by Prof. Remo Ruffini (see <http://www.icranet.org/documents/Ruffini-Cambridge2017.pdf>).

The video of the seminars: <http://www.icranet.org/kerr-ruffini-cambridge>

ICRANet, International Center for Relativistic Astrophysics Network, is an International Organization. The Members are four States and three Universities and Research Centres: the Republic of Armenia, the Federal Republic of Brazil, the Republic of Italy, the Vatican City State as well as the University of Arizona (Tucson, USA), Stanford University (USA) and ICRA. The coordinating Centre is located in Piazza della Repubblica n.10 in Pescara, Italy. The financial support by the Italian Ministry of Foreign and International Cooperation is acknowledged.

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