

Foreword

We started the RETCO (REcent Trends in the study of Compact Objects) series of conference with a modest aim of extending the field of high energy astrophysics related to compact objects, to the students of north-eastern India. However, the success of the previous meeting encouraged us to continue this effort once in every two years in order to assess the progress made in the field and also to define new frontiers of the field. There has been tremendous progress made in the field starting from the tentative analysis of Cygnus X-1 during the seventies, to today, when we are making catalogs of feeding and matter ejection behaviour of black holes and neutron stars. And not just making the catalogs, but also using fundamental equations in order to decipher the inner physics of such objects. We have moved far ahead from the decades of seventies and eighties of the last century, to well into the twenty first century in theoretical front too. Today we are not limited to obtaining the approximate analytical solutions of hydrodynamic equations in strong gravity, but we have progressed to build highly sophisticated magneto-hydrodynamic codes in general relativistic frame work, in order to find correct physics of the behaviour of matter around these objects. However, we still have not been able to find the ‘holy grail’, i. e., the exact signature of existence of black hole horizon, and there by settling the question of testing general relativity in the realm of strong gravity once and for all. This question however, cannot be addressed satisfactorily by theoreticians and observers separately, but instead by a very close collaboration between the two, and hence the insistence of the phrase ‘theory and observation’ in the title of this series of meetings. The coincidence of centenary year of general relativity, launching of ASTROSAT and the installation of the 3.6 m Devasthal optical telescope (DOT) – the biggest in India, in this eventful year, could not have been more symbolic than the stated goal of our research endeavour.

The choice of ARIES as a venue was a very prudent one, if one reason being the beautiful terrain, the other being the proximity to observing facilities, which for budding observers is a blessing and a humbling experience for budding theoreticians. During the meeting, we made full use of the new auditorium which was build few years ago. The expertise of the participants ranged from X-ray, optical, radio observations to hard core theory and numerical simulations. Topic covered in the meeting, ranged from AGN studies, microquasars, pulsars, CVs, evolution and morphology of extra-galactic jets etc. While senior researchers presented their life time of work in order to set the bench mark, the younger ones on the other hand, boisterously plunged into the ensuing debates after each talk with whatever new ideas they could bring to the community. About sixty odd participants attended the meeting, with few luminaries of the land missing the action because of some pressing issues in their respective home institutes.

The head of the Institute of ARIES, Dr. Wahab Uddin, was very kind to fund this meeting entirely, and ARIES faculties also supported the cause of this meeting

enthusiastically. The non-academic staff members of ARIES, especially those who manage the finance, the drivers who ferried the participants to and fro, the canteen staff and other staff members supported and helped the LOC for making this meeting a grand success. The level of participation was all encompassing, while Dr. B. Kumar the project manager of DOT, explained the scope of the four metre class telescope to the participants, Dr. Gopinathan – the In-charge of Devasthal facility, gave a physical demonstration of the telescope when the participants visited the facility. We acknowledge senior faculties of ARIES like Drs. S. B. Pandey, A. C. Gupta, H. Chand, J. C. Pandey for their unwavering support. We also express our gratitude to ISAC/ISRO for giving us the permission to use the schematic diagram of ASTROSAT and the light curve of black hole candidate GRS1915+105 in designing the front cover. Moreover, the research scholars and postdocs like Mr. Mukesh Vyas, Rajiv Kumar, Parveen Kumar, to name a few, who worked day and night to arrange this meeting. A special thanks to Subhash Bose in designing the poster, banner during the meeting and the cover page of this proceedings. We would also like to acknowledge Mr. Purushottam from ARIES computer section to maintain the web page of the conference. We express our deepest regards to all National Advisory committee members for their ready advices, Organizing Committee members in planning the meeting, Local Organizing Committee members in executing the plan and all the scientists who refereed the papers submitted for publication in this proceedings. We also acknowledge Bulletin of Astronomical Society Editorial board for accepting this proceedings to be published in its conference series.

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