The Cosmic-Lab Conference: Star Clusters as Cosmic Laboratories for Astrophysics, Dynamics and Fundamental Physics – MODEST 16

Bologna, April 18-22, 2016

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FOREWORD

Cosmic-Lab was a five-year project aimed at probing the complex interplay between dynamics and stellar evolution by using Galactic globular clusters as cosmic laboratories, and the most exotic by-products of this interplay (blue straggler stars, millisecond pulsars, and intermediate-mass black holes) as test-particles. The project has been funded by the European Research Council (ERC), within the 2010 Advanced Grant call: it started on May 1st 2011 and ended on April 30th, 2016. The Principal Investigator is Francesco R. Ferraro, full professor at the Physics and Astronomy Department of the University of Bologna (Italy). This international conference was meant to be the final action of the Cosmic-Lab project. The event was also the 16th meeting of the MODEST (Modeling and Observing DEnse STellar systems) collaboration.

The purpose of the conference was to put together theorists and observers for discussing the status of the research on the Cosmic-Lab topics. Accordingly, the conference has been organized in four main sections: blue straggler stars, millisecond pulsars, intermediate-mass black holes and dynamics of collisional systems. The conference was held in the prestigious Giorgio Prodi lecture hall, in the heart of the Monumental Complex of San Giovanni in Monte, a place of extraordinary beauty and historical art value in the centre of Bologna. The lecture hall, adorned with a beautiful sixteenth-century fresco by Bartolomeo Cesi, was once the dining-hall of the nunnery of the Lateran Canons. The outside magnificent cloister and its sixteenth-century porch were the enchanting frame of all coffee and lunch breaks, and poster exhibition. The conference was indeed a success: more than 100 scientists from all over the world attended the talks during 5 days, and the most recent advancements of the astrophysical research in the Cosmic-Lab topics have been illustrated through more than 70 talks and 20 poster contributions, with 10 talks specifically devoted to present the results obtained by the Cosmic-Lab team.

The first contribution in this volume, presented by the PI of the project, provides a detailed summary of the Cosmic-Lab achievements. Then, the proceedings include a large fraction of the oral and poster contributions presented at the conference. We are grateful to all the participants who sent us their papers. We also acknowledge the Scientific Organizing Committee (SOC) for the thoughtful selection of the oral contributions and invited talks, and the Local Organizing Committee (LOC) for the precious help in organizing the event. Our deep appreciation also goes to the many colleagues and friends who collaborated with us during these years, thus contributing to make the project a success: it was our pleasure to work with them and share the enthusiasm for this science.

A special dedication to the memory of our friend and collaborator Bob Rood, who saw only the rising part of the project, before unexpectedly passing away on November 2nd, 2011. He would have certainly enjoyed the meeting in Bologna and indeed he was with us in our hearts.

The on-line material of the event can be found at the Conference web page of the Cosmic-Lab project: `http://www.cosmic-lab.eu/Cosmic-Lab/The_Conference.html`

Francesco R. Ferraro and Barbara Lanzoni