

# The 24th Workshop on General Relativity and Gravitation in Japan (JGRG24)

Tomohiro Fujita

Kavli IPMU Graduate Student

Shinji Mukohyama

Professor of the Yukawa Institute for Theoretical Physics, Kyoto University and Kavli IPMU Visiting Senior Scientist

Ryo Namba

Kavli IPMU Postdoctoral Fellow

Rio Saitou

Postdoctoral Fellow, Yukawa Institute for Theoretical Physics, Kyoto University

*The 24th Workshop on General Relativity and Gravitation in Japan (JGRG24)* was held at Kavli IPMU from November 10 through 14, 2014. The JGRG is a series of annual workshops that have continued since 1991 with the aim of comprehensive understanding of the General Relativity (GR) and gravity through various approaches.

The recent progress on cosmological and astrophysical observations has been outstanding. The space-based observations of the Cosmic Microwave Background (CMB) have determined cosmological parameters with unprecedented precision, and the ground-based observations of the CMB polarizations have provided various hints to the existence and nature of gravitational waves (GWs). Based on several proposed projects for direct detection of GWs, the construction of GW interferometers is already underway. Moreover, observational techniques have been progressively improved to search for the neutrinos that emerge from various astrophysical objects and to probe the detailed nature of dark

energy.

On the theoretical side, there have been extensive studies on inflationary models that predict the amount of primordial GWs consistent with the observations. The models in bigravity and massive gravity theories, which have recently been developed, are only a few of the examples. Theories of various fields, such as modified gravity, string, quantum gravity, and mathematical relativity, have also been experiencing intriguing advances. For example, new scalar-tensor theories have been proposed, and the properties of black holes in different space-times and/or dimensions have been explored.

The JGRG24 hosted approximately 180 attendants from 15 different countries, with 9 invited talks, 67 contributed talks, and 38 poster presentations. The topics spanned a broad range in both observational and theoretical aspects, such as dark matter, axion cosmology, string theory, black holes, modified gravity, GW experiments, stellar formations, CMB, large-scale structure, topological defects, inflation, gravitational lensing, and neutrinos. Each subject received intensive discussions with enthusiasm. A few young researchers and students were selected and received awards for their outstanding presentations at the end of the workshop.

