IOA Seminar



## Symmetries in Metric-Affine Gauge Theories of Gravity toward Phenomenology

**Date** 10:30 - 12:00, May 22 (Thursday), 2025

Place 1118, Building 9 (Zoom ID: 881 5903 1592)

## Speaker

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## Abstract

General relativity has been verified as the most successful theory of gravity via a series of observations in astrophysics and cosmology. However, recent observations gradually clarify new issues such as the tension problems of cosmological parameters while elaborating the understanding of the old issues such as dark energy and quantum gravity. To elucidate these issues, modified gravity theories have been investigated, Metric-Affine gauge theory of Gravity (MAG) is one of these theories. In this talk, I will introduce MAG, focusing on TEGR and STEGR theories. After that, I will explain the Dirac-Bergmann analysis, which is a main tool for investigating symmetries existing in MAG, together with a brief review of the recent status of the analysis in TEGR and STEGR theories. Finally, based on the symmetries, I will discuss possible approaches of MAG to phenomenological aspects.

## Biography

Dr. Kyosuke TOMONARI obtained his Ph.D in March of 2024 from Institute of Science Tokyo (formerly Tokyo Institute of Technology). From April 2024 to March 2025, he proceeds with his activity as a postdoctoral researcher at Institute of Science Tokyo. From April 2025 to the present, he continues researching as a visiting researcher at University of Tokyo. He is eager to expand his research activities based on more phenomenological aspects such as astrophysics and cosmology.