

WIPMU2025



Monday 14 July 2025 - Friday 18 July 2025

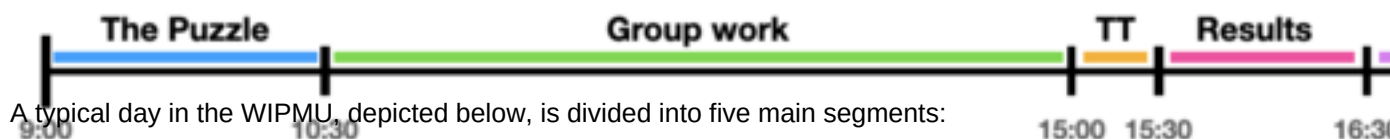
Kavli IPMU

Scientific Programme

The Concept

The Workshop on the Physics and Mathematics of the Universe (WIPMU), hosted by Kavli IPMU, is a dynamic, interdisciplinary and intergenerational event designed to tackle some of the most fascinating and challenging puzzles in physics, mathematics, astrophysics, astronomy and machine learning.

Over five days, this workshop will bring together fifty to sixty PhD students, postdoctoral researchers, and professors from diverse fields. Participants will engage with the leading experts who will present questions that they found to be the most exciting and intriguing in their fields. Through numerous collaborative discussions, the workshop will aim to foster exploration toward resolving these scientific puzzles.



The Puzzle

The day starts with a one-lecture by a world-class researcher, whose aim is to introduce a puzzle that he or she has found to be most intriguing and exciting, presented in a way that is accessible to researchers from all four fields of mathematics, physics, astrophysics, and astronomy. This will be followed by a half-an-hour question session.

Group Work

The lecture session will be followed by group discussions, where the participants will be asked to solve the puzzles introduced in the previous lecture. The groups will be relatively large, with about ten participants, coming from different backgrounds, and the possibility to form smaller groups naturally if required.

Results & Overview

Each group is expected to present their results -- either the solution or the most promising path towards the solution of the question -- giving the main idea within ten minutes.

The presentation of the results will be followed by another talk, where the speaker will make an overview of the larger part of the field that was investigated on that day.

Socializing

A relaxed environment during tea time (TT) and socializing events will promote further discussions among all of the participants. The workshop will include welcome drinks, dinner for the speakers, and many other events with a casual atmosphere to promote further collaborations.

Events

In addition to the standard programme, the workshop will stimulate interest in science locally. We plan to organize several events such as a public lecture and panel discussion with world-leading experts that will engage the locals in the surrounding area of Kashiwa and Tokyo.

Physics colloquia at Kavli IPMU will additionally engage not only the participants of the school, but also the researchers at IPMU and The University of Tokyo.