

# Our Team

## Nobuhiko Katayama

Research Area: **Experimental Physics**

Associate Director of Kavli IPMU

My current research interests are in the field of observational cosmology, especially on the properties of dark energy and inflation at the very early universe. The first light of the Hyper Suprime Cam at the Subaru Telescope is around the corner. The HSC wide field imaging survey is aimed at exploring the properties of dark energy, by measuring the shape of more than 250 million galaxies most precisely and computing the shear fields due to the weak gravitational lensing. I am also involved in a small satellite project called LiteBIRD, which detects the primordial B mode polarization of the cosmic microwave background arising from the gravitational waves from the primordial tensor fluctuation generated by the inflation. Until several years ago,



I had worked on the Belle experiment at the High Energy Accelerator Research Organization (KEK), which studied the properties of the CP violation in the B meson system. We have experimentally “proven the Kobayashi Maskawa theory.” I think the dark energy and the “particles” which cause the inflation are the subject of particle physics. It is quite intriguing that we can pursue research using the good old experimental techniques of high energy physics.

## Katsuyuki Naoi

Research Area: **Mathematics**

Postdoc

I am studying the representation theory of infinite dimensional Lie algebras and their  $q$ -analog. Recently, I am very much interested in finite-dimensional representations of quantum affine algebras, which are the  $q$ -analogs of affine Lie algebras. This field was initiated in the first half of the 90's, mainly by Chari and Pressley, and it is still studied in several directions such as the  $q$ -characters or geometric



realizations of representations. I am studying them especially in view of their classical limits.

## Norimi Yokozaki

Research Area: **Theoretical Physics**

Postdoc

Supersymmetry (SUSY) is a prominent candidate for the physics beyond the standard model. The existence of SUSY is worth believing in light of the solution for the hierarchy problem. There are many things which have to be considered, however, such as how to break SUSY, the scale of SUSY breaking, and the consistency with the cosmological history. That is, SUSY introduces some difficulties, such as the SUSY



CP/flavor problem and the gravitino over-production problem. I would like to find out what the model and the scenario are true from the viewpoint of phenomenology.

Our Team