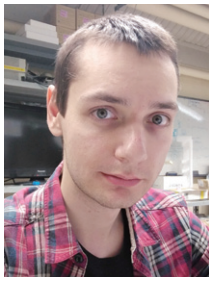
Our Team

Dmitry Chernyak

Research Field: Experimental Physics

Postdoc



As a member of KamLAND collaboration I participate in search for neutrinoless double beta decay. Observation of such extremely rare nuclear process will allow to establish the Majorana nature of neutrino, and help to determine the neutrino-mass hierarchy and estimate the effective Majorana mass of neutrino.

KamLAND-Zen is the world's most sensitive experiment (as of May 2016) to search for neutrinoless double beta decay. It uses liquid scintillator loaded with enriched xenon to study double beta decay of Xenon-136. My research efforts will be focused on improvements of the KamLAND-Zen sensitivity towards the inverted mass hierarchy region as well as other projects.

Shigeki Inoue

Research Field: Astronomy

Postdoc

I have been studying theoretical galactic astrophysics, mainly with numerical simulations and analytic calculations. Especially, my recent interest is in physical processes of high-redshift galaxies in their formation stages and how the formative galaxies are connected to the Milky Way in the current universe. Although I will keep studying galaxies, I am going to start out on a new field: the first stars**!** It will be so exciting for me to dive into a new project in a new environment.

Chen Jiang

Research Field:: Mathematics

Postdoc

My research interest lies in algebraic geometry. More specifically, I am working on birational geometry, which focuses on classification of algebraic varieties under birational equivalence. In particular, I am interested in boundedness problems in birational geometry, including boundedness of varieties of Fano type and birationality problem. Most of my work are related to Fano threefolds and I showed that singular Fano threefolds form a birationally bounded family. Also I investigated boundedness of invariants related to Fano varieties, such as pluricanonical systems, anti-canonical volumes, alpha-invariants, Chern classes, and so on.

Yin Li

Research Field: Theoretical Physics and Cosmology

Postdoc

My research interests lie in constraining fundamental physics and cosmology using the large-scale structure of the universe, given the wealth of information contained in current and upcoming surveys. Recently I have been focusing on studying the impact on the large-scale structure probes due to matter distribution that goes beyond the survey scale, known as the super-sample effect. This novel effect introduces additional covariance in the data, and requires new parameters to be introduced when extracting cosmological information. I am looking forward to continuing exploring this and other projects with Kavli IPMU researchers, while seeking to form new collaborations on a broader range of topics.

Taira Oogi

Research Field: Astronomy

Postdoc

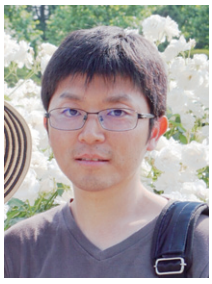
My research focuses on exploring the galaxy formation and evolution processes. I am especially interested in the mass and size evolution of early-type galaxies. I have shown that dry mergers between early-type galaxies are an important process for the size evolution with N-body simulations. I am also interested in the formation and evolution of quasars and supermassive black holes, which reside at the center of almost all massive galaxies.

I am investigating the statistical properties of quasars using a semi-analytic model of galaxy formation.

Yasuhito Sakaki

Research Field: Theoretical Physics

Postdoc

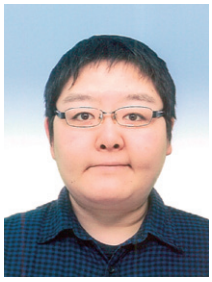


Though the Standard Model in particle physics describes microscopic phenomena very well, it is not perfect. My research focuses on how we examine physics beyond the Standard Model using information derived from collider experiments to its fullest extent. I am especially interested in creating methods using information, e.g., the internal structure of quark and gluon jets which are copiously produced in high-energy experiments. Precise understanding of the quantum chromodynamics describing jet properties and the data related to the internal structure of jets are needed to improve these methods. In order for methods using detailed jet properties to become standard in future experiments, I think it would be necessary to demonstrate their usability in many cases.

Ichiro Takahashi

Research Field: Astronomy

Postdoc



I have been researching the variable objects (mainly transients) in multiple wavelengths. My interest is to derive a physical description of them from light curves and spectra.

I have examined the origin and geometric description of gamma-ray bursts and neutron stars using a time series of X-ray spectra. In the meanwhile, I have developed and operated optical instruments for examining GRB afterglow and supernovas.

At Kavli IPMU, I will research transients such as supernovae using Subaru/HSC data, and visualize the big data of Subaru/HSC.

Mathematics Group