Our Team

Richard Calland

Research Field: Experimental Physics

Postdoc

I am a member of the SuperK and T2K experiments, which study neutrinos generated from the sun, in the upper atmosphere and from an intense human-made neutrino beam. The study of neutrinos enables us to understand mysteries about the universe such as why there is more matter than anti-matter. Neutrinos can help with this by potentially exhibiting CP violation, which manifests in a measured difference in the properties of neutrinos and anti-neutrinos. Currently T2K is beginning to study anti-neutrinos, which will lead to interesting results in the near future. My interests are using advanced statistical techniques to make optimum use of our data to extract the most sensitivity to the physics parameters we measure, along with improving the detector reconstruction algorithms to enhance our physics reach.

Edmond Cheung

Research Field: Astronomy

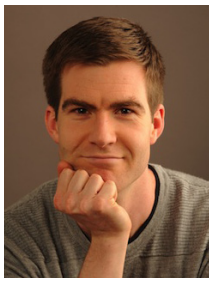
Postdoc

I am a new postdoctoral researcher from the University of California Santa Cruz, and my research focuses on galaxy evolution. Specifically, I am interested in the interplay between galaxy structure, e.g., bulges and bars, and galaxy evolution. I am a member of several teams, including AEGIS, CANDELS, Galaxy Zoo, and now, MaNGA. And with MaNGA, I plan to continue exploring this link between galaxy structure and galaxy evolution in new and interesting ways.

William Donovan

Research Field: Mathematics

Postdoc



My research is in the field of algebraic geometry. I focus on applying ideas from physics and non-commutative algebra to study varieties, with examples including homogeneous spaces and their Calabi-Yau relatives, and complex 3-folds and their birational modifications. Mirror symmetry provides much of the motivation for this work, and homological algebra provides many of the tools. Currently, I am working on problems on higher-dimensional varieties, and applying homological algebra to better understand moduli spaces associated to them.

Dongmin Gang

Research Field: Theoretical Physics

Postdoc

My main interest is studying the low-energy theories appearing from intersecting M2/M5 branes in M-theory. M-theory is so rich that it can provide new insights on various topics in physics and mathematics. Especially, the system of multiple M5-branes wrapping on 2 and 3-dimensional manifolds is my current research topic. The topic is closely related to the AGT conjecture, 3d/3d correspondence, holographic principal, quantum Teichmuller theory and volume conjecture.

Dulip Piyaratne

Research Field: Mathematics

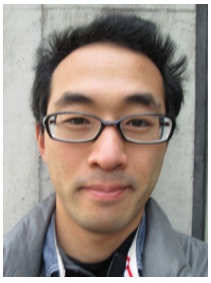
Postdoc

My research is primarily concerned with studying geometry of algebraic varieties using homological algebraic methods. In particular, the theory of derived categories provides an efficient algebraic platform to investigate the "hidden" geometric information of a variety. Also they have emerged as important objects in string theory. My recent research is focussed on constructing categorical stability conditions, and also studying associated moduli problems using Fourier-Mukai theory. I am also interested in investigating counting invariants on varieties and wall crossing phenomena.

Naonori Sugiyama

Research Field: Cosmology

Postdoc



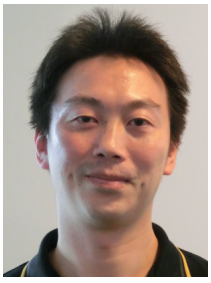
My research interest lies in the field of theoretical cosmology, especially for the origin of primordial density fluctuations in the inflationary period of the early universe, and the cosmic large scale structures which are formed as a result of amplification of the primordial density fluctuations due to gravitational instability.

I have studied the statistical feature of the primordial density fluctuations, and developed analytical models to describe the evolution of the cosmic structures. One goal of my research is to clarify the evolution of the cosmic structures through comparing my models with some of large galaxy surveys.

Michihisa Takeuchi

Research Field: Theoretical Physics

Postdoc



My research interests are: what is dark matter, what is the nature of the Higgs boson and physics beyond the Standard Model (BSM). To explore these questions, I am mainly working on collider phenomenology. Besides working on general BSM physics searches at the LHC, I also have worked on top physics as it is likely that signals of new physics first appear in the top sector. The optimal use of the data is important, and I am working on the use of jet substructure information. The LHC will start operating again from this year, and it will be a very exiting time.