Our Team

Ilya Karzhemanov

Research Area: Mathematics

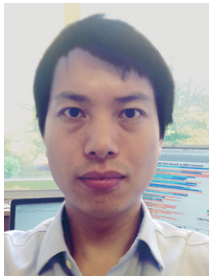
Postdoc

My research interests are in algebraic, especially birational, geometry. I am interested in developing numerical criteria, which should be typical for rational, or more specifically, homegeneous/toric varieties. Among such invariants are (asymptotic) multiplicity-type functions, constructed with respect to a given line bundle L on an algebraic variety X, i.e. to any point p on X the function (say m) in question associates (appropriately averaged) multiplicity $m(p)$ at p of various (maybe not all) global sections of L. In case m is a sort of a distribution on X (e.g. m is constant), one might expect X to be "close to homogeneous space," in particular stable (for one of the (or any) kinds of known differential-geometric versions of stability). On the other hand, the "non-homogeneous" behavior of m should give an obstruction for X to be rational.

Myeonghun Park

Research Area: Theoretical Physics

Postdoc



The primary area of my research is the collider and dark matter phenomenology of physics beyond the standard model (BSM), including, but not limited to, theories with supersymmetry, extra dimensions, and various models motivated by experimental observations. For BSM searches at the LHC, I have been preparing systematic ways for the LHC inverse problem. One of my interests in BSM collider phenomenology is related to the current developments on the computational simulations.

Kavli IPMU researchers gathered on the occasion of its 6th anniversary.

Andreas Schulze

Research Area: Astronomy

Postdoc

Every massive galaxy harbours a supermassive black hole in its center, with masses from a few million to several billion solar masses. Their growth seems to be linked to the evolution of their host galaxies. We need to explain this connection and understand the growth history of black holes. The questions I am addressing in my research are: How are black holes growing? What is their growth history? How is their growth triggered? How is their activity connected to the evolution of their host galaxies?

Yue-Lin Sming Tsai

Research Area: Theoretical Physics

Postdoc

My research interests cover a wide range of complementary topics in the field of dark matter physics, including particle physics, astrophysics, cosmology, and statistics. DM searches incorporate three experimental approaches: i) direct detection (DD), ii) indirect detection (ID), and iii) collider signatures.

Using a dark matter Lagrangian and experimental data sets, particle physicists can constrain the particle model parameter space. In contrast, by utilizing other astrophysical data sets in analyses of ID and DD data, astrophysicists can model-independently constrain the properties of dark matter.