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Research Field Algebraic Geometry

Key words Singularity, Resolution of singularities, McKay correspondence

Current research

I am interested in higher dimensional singularities and the resolutions. When G is a finite subgroup of $SL(3, \mathbb{C})$, the singularity is called rational double point and there is the McKay correspondence between the irreducible representation of G and the minimal resolution of the singularity. There are several types of the generalization and they are related with various mathematics and very interesting. In particular, three dimensional version is related with Superstring theory in Physics.

Prerequisites

I want to assume the student should study basic part of Algebra like group theory and commutative algebra. Moreover, I hope they understand undergraduate geometry and analysis. I prefer students who don't hesitate to study, think and discuss with other people what you wonder. I think graduate school is a place to do your own research freely and it is important to start it when you are undergraduate.

By the way, I am a member of Kavli Institute for the Physics and Mathematics of the Universe (IPMU) in Kashiwa campus. I will consider where we have master course seminar because there are many lectures in Komaba, but I recommend to be at IPMU if you are doctor course student.