Name: Shunsuke Takagi

Research field: Algebraic Geometry

Keywords: Singularities, F-singularities, Frobenius Splitting, Commutative Algebra, Local Cohomology

Summary of current research:

My work is in algebraic geometry and commutative algebra. My current research subject is singularities of algebraic varieties, especially singularities arising from the minimal model program. I study them using the theory of F-singularities, singularities defined in terms of the Frobenius morphism. As a global version of the above study, I also study the geometric properties of Frobenius splitting varieties.

In addition, I am interested in an algebro-geometric approach to topics in commutative algebra. I have studied the behavior of symbolic powers of ideals, the vanishing theorem of local cohomology modules and so on.

Notice for the students:

Before entering the graduate school, students who want to study algebraic geometry under my supervision are expected to know the contents of Chapters 1–3 of Robin Hartshorne "Algebraic Geometry" (GTM 52, Springer-Verlag). Students who want to study more commutative ring theoretic stuff are expected to know the contents of Chapters 1–9 of Hideyuki Matsumura "Commutative Ring Theory" (Cambridge University Press) and the very basics of algebraic geometry.