

Yoshinori Namikawa: A finiteness theorem for symplectic singularities

The notion of a symplectic singularity was first introduced by Beauville. An affine symplectic singularity with a good \mathbb{C}^* -action is called a conical symplectic variety. Many interesting varieties are conical symplectic varieties. For example, among them are nilpotent orbit closures of a complex semisimple Lie algebra, Slodowy slices to such orbits, Nakajima quiver varieties, hypertoric varieties and so on.

In this talk we discuss how many such varieties exist. If we fix the dimension of conical symplectic varieties X and the maximal weight N of the minimal homogeneous generators of the coordinate ring R of X , then there are only finitely many such X up to isomorphism.

We first relate a conical symplectic variety with a log Fano klt pair, which has a contact structure. Then the boundedness result for log Fano klt pairs with fixed Cartier index assures that the family of conical symplectic varieties of a fixed dimension and with a fixed maximal weight, forms a bounded family. Finally we prove the rigidity of conical symplectic varieties by using Poisson deformations.