

Automorphisms of K3 surfaces, holomorphic symplectic manifolds and Enriques varieties

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Abstract

The study of the automorphism group of K3 surfaces has been started by Nikulin, Mukai, Xiao in the 80's-90's, [N, M, X]. Their properties are well understood in many cases. I will present recent progress on the subject, in the symplectic and non-symplectic case, i.e. in the case that the automorphism leaves invariant the holomorphic 2-form or not, with particular attention to the topology of the fixed locus, the invariant K3 lattice and its orthogonal complement, as well as the moduli spaces, [vGS, GS1, GS2, AS, AST]. I will also present recent results, [BNS], on automorphisms of holomorphic symplectic manifolds which are special Kähler manifolds with zero first Chern class. Together with Calabi-Yau manifolds they can be considered as a higher dimensional analogous of K3 surfaces. The study of their automorphisms leads to the notion of Enriques variety, which generalize that of Enriques surface. The latter are exactly the quotients of K3 surfaces by fixed point free involutions and we give a similar definition in higher dimension. In the last part of the talk I will construct explicit examples of Enriques varieties.

References

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