AUTOMORPHISMS OF IRREDUCIBLE SYMPLECTIC MANIFOLDS

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An irreducible symplectic manifold is a complex, compact, Kähler, simply connected manifold X such that $H^0(X, \Omega_X^2)$ is spanned by an everywhere non-degenerate two-form. In dimension two, they are exactly the K3 surfaces. Higher-dimensional examples include the Hilbert schemes of points on K3 surfaces, generalized Kummer varieties and some moduli spaces of sheaves on K3 surfaces.

Not much is known about the automorphism group of an irreducible symplectic manifold of dimension greater than two, in contrary to the case of K3 surfaces. This is mostly due to the lack of a higher dimensional analogue of the global Torelli theorem. In this talk, I will collect some results related to this question and present some new research directions, concerning in particular the automorphisms of Hilbert schemes of points on K3 surfaces and generalized Kummer varieties.