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Moduli of K3 surfaces with cyclic nonsymplectic automorphisms

K3 surfaces, as a 2-dimensional analog of elliptic curves, belong to an important class of varieties/complex-manifolds. Just as for the elliptic curves, K3 surfaces can be classified by using various invariants/viewpoints. In this talk, extending the idea from Alexeev and Engel for lattice-polarized K3 surfaces, I will explain how different viewpoints lead to different compactifications of the moduli of K3 surfaces with cyclic actions and then describe their birational relations. In particular, I will focus on the case of Kondo's sextic K3 surfaces and provide examples of boundary members of various compactifications. This talk is based on joint works in progress with Valery Alexeev, Anand Deopurkar, and Philip Engel.