

The Berglund-Hübsch-Chiodo-Ruan (BHCR) construction provides a method to obtain pairs of Calabi-Yau manifolds that are defined as hypersurfaces in weighted projective spaces and that are mirror in the classical sense. When one has a Calabi-Yau manifold of dimension two, i.e., a K3 surface, another type of mirror symmetry was introduced by Dolgachev: the mirror symmetry for lattice polarized K3 surfaces.

In a joint work with C. Lyons, N. Priddis and R. Suggs, we consider K3 surfaces with a non-symplectic automorphism that are defined by an equation of the form $x^p + f(y,z,w)$ in a weighted projective space. We prove that for this class of surfaces the two forms of mirror symmetry agree. I will describe these surfaces and the mirror constructions and I will show how to prove the result.