EQUIVALENCE OF MIRROR CONSTRUCTIONS

Since its discovery by physicists about 20 years ago, mirror symmetry has been the focus of much interest to both physicists and mathematicians. Mathematically, there are many different constructions or rules for determining when a Calabi–Yau manifold is "mirror" to another. Therefore, a natural question is whether the various rules for finding the mirror Calabi–Yau agree, when more than one applies.

I will present some general results for Calabi-Yau manifolds of any dimension, relating Batyrev duality and Berglund-Hüsch-Krawitz mirror construction. As for lattice polarized K3 surfaces, another definition of mirror symmetry is due to Dolgachev (the so-called LPK3 mirror symmetry). I will then focus on K3 surfaces admitting a non-symplectic automorphism of order n and I will explain the equivalence of BHK and LPK3 mirror symmetry. This result is due to Artebani, Boissière, Sarti for $n = 2$, to Lyons, Priddis, Suggs and myself for $n > 2$ prime number and it is a work in progress for n not prime.