

Among the constructions of mirror pairs of Calabi-Yau varieties, we are interested in Batyrev's duality and Berglund-Hubsch-Krawitz construction. The first one is based on the properties of reflexive polytopes and their duals and allows to obtain pairs of families of Calabi-Yau hypersurfaces in toric Fano varieties. Batyrev shows that general elements in these families satisfy the topological mirror test, i.e. their Hodge diamonds are rotated by 90 degree.

With the BHK construction one can obtain pairs of Calabi-Yau hypersurfaces in weighted projective spaces (or fake weighted projective spaces) starting from a square matrix and a finite group. A result by Chiodo and Ruan proves that these varieties satisfy the topological mirror test.

I'll show a construction of pairs of families of Calabi-Yau varieties which generalized both the BHK and Batyrev's construction. This is based on the definition of good pairs of polytopes. This is a joint work with M. Artebani and R. Guilbot.