Calabi-Yau hypersurface and mirror symmetry

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1 Preliminaries

1.1 Mirror constructions

We first review the Batyrev-Borisov construction for hypersurfaces in toric varieties.

Let Δ be a reflexive polytope of dimension n. Let $\mathbb{P}_\Delta$ be the associated toric variety.

2 The deformation

Let $\mathcal{K} = D_6 * D_6 * \{x_0\}$, and let $\mathbb{P}(\mathcal{K})$ be the associated Stanley-Reisner scheme.

Let dP be the polytope associated to the del Pezzo surface of degree 6.

Proposition 2.1. *There is a flat deformation of $\mathbb{P}(\mathcal{K})$ to the toric variety associated to the polar dual $(dP \times dP)^\circ$.*

Corollary 2.2. *There is a flat deformation of $D_6 * D_6$ to a singular Calabi-Yau threefold X_t. It has 48 singularities.*