Adv. Theor. Math. Phys. **8** (2004) 939–954

Mirror Symmetry and Supermanifold

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Abstract

We develop techniques for obtaining the mirror of Calabi-Yau supermanifolds as super Landau-Ginzburg theories. In some cases the dual can be equivalent to a geometry. We apply this to some examples. In particular we show that the mirror of the twistorial Calabi-Yau $\mathbf{CP}^{3|4}$ becomes equivalent to a quadric in $\mathbf{CP}^{3|3} \times \mathbf{CP}^{3|3}$ as had been recently conjectured (in the limit where the Kähler parameter of $\mathbf{CP}^{3|4}$, $t \to \pm\infty$). Moreover we show using these techniques that there is a non-trivial $\mathbf{Z}_2$ symmetry for the Kähler parameter, $t \to -t$, which exchanges the opposite helicity states. As another class of examples, we show that the mirror of certain weighted projective $(n+1|1)$ superspaces is equivalent to compact Calabi-Yau hypersurfaces in weighted projective n space.

e-print archive:
http://lanl.arXiv.org/abs/hep-th/0403192