Mirror Symmetry of Abelian Fibered Calabi-Yau Manifolds

Monday, 2 June 2025 14:00 (1 hour)

When constructing Calabi-Yau manifolds of dimension three, we often encounter elliptic or K3 fibered Calabi-Yau manifolds, and mirror symmetry of elliptic or K3 fibered Calabi-Yau manifolds is a well-studied subject from a variety of different interests. In contrast to this, except for those given by the fiber products of elliptic surfaces, Calabi-Yau threefolds fibred by abelian surfaces are rather rare to encounter. In this talk, I will describe mirror symmetry of a family of Calabi-Yau manifolds X fibered by (1,8)-polarized abelian surfaces found by Gross and Popescu in 2001, and studied by Pavanelli, with Hodge numbers $h^{1,1}(X) = h^{2,1} = 2$. We find many boundary points (LCSLs) in a suitably compactified parameter space of the family and identify them as a Fourier-Mukai partner of X, a birational model of X, and also a free quotient of X. We calculate Gromov-Witten invariants ($g \leq 2$) from each LCSL point and observe that these are written in terms of quasi-modular forms. This talk is based on a work with Hiromichi Takagi that appeared in CNTP (2022).

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