

Singular Lagrangian toric fibrations on smoothing of algebraic cones

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In this talk, we present a construction of special Lagrangian fibrations on the smoothing of Gorenstein singularities. This construction was initially described by Gross, with further details studied under the perspective of the SYZ conjecture of mirror symmetry in subsequent works. Our approach presents a fresh description of the Gross fibration using global coordinates tied to Altmann's characterization of the smoothing. This enables us to provide alternative proofs for known facts concerning these fibrations, construct a convex base diagram generalizing those constructed by Symington, and prove a theorem that completely characterizes its shape. Moreover, we use the wall-crossing formula to recover the potential for certain monotone fibers, as initially derived in Lau's previous work, and discuss their non-displaceability by precisely describing the cases where there exist local systems on the monotone Lagrangian for which their Floer homology are non-vanishing. We provide several interesting examples along the way and end by discussing some future developments for this project.