

Jim Bryan: **Elliptically fibered Calabi-Yau threefolds, Jacobi-Forms, and the topological vertex**

Several recent conjectures suggest that curve counting partition functions for elliptically fibered Calabi-Yau threefolds are governed by Jacobi forms. We survey the various conjectures and describe recent progress in Donaldson-Thomas theory which has led to proofs of some of the conjectures. Namely, by combining motivic and toric techniques, we compute the partition functions for these geometries in terms of the topological vertex. Unexpected connections between the topological vertex and Jacobi forms arise.