q-hypergeometric functions and the geometry of quiver varieties

Vertex functions are special functions associated to Nakajima quiver varieties. They generalize basic hypergeometric functions, which are q-deformations of classical hypergeometric functions, whose study began with Gauss. In recent years, conjectures originating in physics known as "3d mirror symmetry" have uncovered new properties of these functions. Our main result relates the vertex function of a type A quiver variety with that of the cotangent bundle of a complete flag variety. As a consequence, we are able to prove 3d mirror symmetry of vertex functions for a certain class of type A quiver varieties. Time permitting, we will explain ongoing work to extend these results to bow varieties. No prior knowledge of these topics will be assumed.