Smoothness of spherical varieties via toric degenerations

Spherical varieties are a natural generalization of toric, symmetric, and flag varieties and form a rich class of algebraic varieties with an action of a reductive group. We combine the theory of toric degenerations of spherical varieties using representation theory with a recent result by Brown-McKernan-Svaldi-Zong, which characterises toric varieties using log pairs, in order to study the geometry of (horo-)spherical varieties. This is joint work in progress with Johannes Hofscheier.