Algebraic Geometry Seminar

On $K$-moduli of quartic threefolds

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Abstract: K-stability provides a powerful tool for constructing compact moduli spaces, known as K-moduli spaces, for Fano varieties. However, determining the K-moduli space for specific Fano varieties, such as Fano hypersurfaces, can be a challenging problem. Previously, K-moduli space for cubic hypersurfaces was shown to be the same as GIT up to dimension 4. In this talk, I'll discuss some recent progress on the K-moduli space of quartic threefolds where K-moduli and GIT differ significantly. We find a new codimension 3 locus in the K-moduli space that parametrizes certain weighted complete intersections. Moreover, we show that this locus is closed by relating the K-stability of such complete intersections to certain del Pezzo surface pairs. This is joint work with Hamid Abban, Ivan Cheltsov, Alexander Kasprzyk, and Andrea Petracci.