Cubic threefolds, singularities, and their invariants

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Abstract

Cubic hypersurfaces are important examples in algebraic geometry and a lot of research, both classical and recent, is devoted to them. We will discuss complex cubic threefolds, that is, hypersurfaces of degree three in complex projective four-space $\mathbb{CP}^4$. More specifically, we will focus on the singular ones. We will present a classification of isolated singularities appearing on cubic threefolds. Then, we will use the classification to compute certain invariants of singular cubic threefolds, including the cohomology groups. This talk is partially based on joint work with Lisa Marquand.