SPIRO KARIGIANNIS, University of Waterloo

Existence of G_2 conifolds: a progress report

Compact G_2 manifolds with isolated conical singularities, also called G_2 conifolds, are important objects in physics. They are expected to exist in abundance but no examples have yet been found. I will review past work of myself (on desingularization) and myself with Jason Lotay (on deformation theory) that gives strong mathematical evidence for their existence. Then I will discuss our current progress (with Lotay) on a possible construction of G_2 conifolds, by generalizing a new construction of myself and Dominic Joyce of smooth compact G_2 manifolds.