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Topological Transitions of Calabi-Yau Threefolds

It was proposed in the works of Clemens, Reid and Friedman to connect Calabi-Yau threefolds with different topologies by a process known as a conifold transition. This operation may produce a non-Kahler complex manifold with trivial canonical bundle. In this talk, we will discuss the propagation of differential geometric structures such as metrics with special holonomy and Yang-Mills connections through conifold transitions. This is joint work with T. Collins and S.-T. Yau.