Topological Transitions of Calabi-Yau Threefolds

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Abstract:

Conifold transitions were proposed in the works of Clemens, Reid and Friedman as a way to travel in the parameter space of Calabi-Yau threefolds with different Hodge numbers. This process may deform a Kahler Calabi-Yau threefold into a non-Kahler complex manifold with trivial canonical bundle. We will discuss the propagation of differential geometric structures such as balanced hermitian metrics, Yang-Mills connections, and special submanifolds through conifold transitions. This is joint work with T. Collins, S. Gukov and S.-T. Yau.