Calabi-Yau 3-fold

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A Calabi-Yau 3-fold is a geometric object which is expected to describe the extra dimensions in our universe, and interesting in both mathematics and physics. An algebraic curve counting theory in this variety corresponds to the theory of periods under the mirror symmetry, and it is an important subject to study its property. Now there are two kinds of such counting theories, Gromov-Witten (GW) theory, Donaldson-Thomas (DT) theory, and they were conjectured to be equivalent in 2004. This interesting conjecture including important properties of both theories, and has been checked in several situations so far.