

I will begin with a general discussion of the (conjectural) equivalence between Gromov-Witten theory of smooth projective 3-folds and the Donaldson-Thomas theory of the Hilbert schemes of curves in the same 3-fold. I will then focus on some established instances of this general conjecture related to: (1) local toric Calabi-Yau 3-folds, (2) quantum cohomology of Hilbert scheme of points on a smooth surface. These will be the topics of lectures number 2 and 3, respectively.