1014-53-291 **Sergiy V. Koshkin*** (koshkin@math.ksu.edu), Kansas State University, Department of Mathematics, Manhattan, KS 66506. *Conormal bundles to knots and the Gopakumar-Vafa conjecture.*

We offer a new construction of Lagrangian submanifolds for the Gopakumar-Vafa conjecture relating Chern-Simons theory on the 3-sphere and Gromov-Witten theory on the resolved conifold. Given a knot in the 3-sphere its conormal bundle is perturbed to disconnect it from the zero section and then 'pulled' through the conifold transition. The result is a totally real submanifold of the resolved conifold which is Lagrangian in a perturbed symplectic structure. It also possesses uniformity properties which ensure that the moduli of holomorphic curves ending on it are compact in the Gromov topology. In the process we prove that the resolved conifold has bounded geometry. (Received September 06, 2005)