

# Instanton counting on blowup

Hiraku Nakajima

*Department of Mathematics Kyoto University*

*Faculty of Science*

*Kyoto 606-8502*

*JAPAN*

## **Abstract**

In this series of lectures, we study relations between moduli spaces of torsion free sheaves on a surface and that on its blowup. We study a special case when the surface is an affine plane in detail. One of the application is a proof of Nekrasov's conjecture: an equivariant integration over the moduli space gives a deformation of the Seiberg-Witten prepotential for the  $N = 2$  SUSY Yang-Mills theory. This is a kind of mirror symmetry between the gauge theory and a SW curve.