1061-14-194 **Yu-jong Tzeng*** (yjt@math.stanford.edu), Math Department, Stanford University, Stanford, CA 94305. *Universal Formulas for Counting Nodal Curves on Surfaces.*

The problem of counting nodal curves on algebraic surfaces has been studied since the nineteenth century. On the projective space $\mathbb{P}^2$, it asks how many curves defined by homogeneous degree d polynomials have only nodes as singularities and pass through points in general position. On K3 surfaces, the number of rational nodal curves was predicted by the Yau-Zaslow formula. Göttsche conjectured that for sufficiently ample line bundles L on algebraic surfaces, the numbers of nodal curves in $|L|$ are given by universal polynomials in four topological numbers. Furthermore, based on the Yau-Zaslow formula he gave a conjectural generating function in terms of quasi-modular forms. The formula is consistent with many existing results on $\mathbb{P}^2$, K3, and curves with at most 8 nodes on general surfaces. In this talk, I will discuss how degeneration methods can be applied to count nodal curves. (Received April 13, 2010)