BOSTON UNIVERSITY GEOMETRY SEMINAR

Universal Formulas for Counting Nodal Curves on Surfaces

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Friday, Oct. 8, 3-4 pm in MCS 149
Tea 2:45-3 in MCS 153

Abstract:

The problem of counting nodal curves on algebraic surfaces has been studied since the nineteenth century. On the projective plane $\mathbb{P}^2$, 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 and two unknown series. In this talk, I will discuss how degeneration methods can be applied to count nodal curves and sketch my proof of Göttsche's conjecture.