ALGEBRAIC GEOMETRY SEMINAR
AT COLUMBIA UNIVERSITY

2:00 pm:

Izzet Coskun

Massachusetts Institute of Technology

Characteristic numbers via degenerations

Inspired by the work of Kontsevich and aided by ideas from physics, there has been significant progress in computing the number of curves incident to general linear spaces in projective space. These numbers are called the characteristic numbers of curves. In this talk I will describe one way of extending these ideas to compute the characteristic numbers of higher dimensional varieties. I will focus mainly on the case of surfaces and linear spaces.

3:30 pm:

Anders Buch

Aarhus University

Quantum cohomology of isotropic Grassmannians

The (small) quantum cohomology ring of a homogeneous space is a deformation of the classical cohomology ring, which uses the three point, genus zero Gromov-Witten invariants as its structure constants. I will present structure theorems for the quantum cohomology of isotropic Grassmannians, including a quantum Pieri rule for multiplication with the special Schubert classes, and a presentation of the quantum ring over the integers with the special Schubert classes as the generators. These results are new even for the ordinary cohomology of isotropic Grassmannians, and are proved directly from the definition of Gromov-Witten invariants by applying classical Schubert calculus to the kernel and span of a curve. This is joint work with A. Kresch and H. Tamvakis.

5:00 pm:

Carel Faber

KTH and Johns Hopkins

Cohomology of local systems on moduli spaces of curves and of abelian varieties

The computation of the Σ_n-equivariant cohomology of the moduli space $M_{g,n}$ of n-pointed curves of genus g can essentially be reduced to that of the cohomology of local systems on M_g for the symplectic group Sp_{2g}. These local systems are pulled back from local systems on the moduli space A_g of principally polarized abelian varieties of dimension g. Van der Geer and I have obtained explicit formulas for their cohomology, which are partly conjectural, in the case of genus 2. I will discuss these results as well as results in genus 3 obtained by Bergström. If time permits, I will also mention recent joint work with Consani.

Friday, January 28, 2005
520 Mathematics Hall