On Severi degrees

Vivek Shende
MIT

I will explain how Euler characteristics of Hilbert schemes of points encode the number of nodal curves present in a family. This allows results on the smoothness of relative Hilbert schemes to be translated into enumerative information. In particular, the multiplicities of the Severi varieties in the versal deformation of an integral planar curve are encoded by the Euler characteristics of the Hilbert schemes of the central fibre alone. In the global setting, the number of nodal curves in a general slice of a sufficiently ample linear system on a surface can be determined from the Euler characteristics of the relative Hilbert schemes. These in turn may be computed by a tautological integral over the Hilbert scheme of points; as a consequence we learn that these Severi degrees are given by universal polynomials in the Chern classes of surface and bundle.

Tuesday, September 13
3:00 p.m.
Harvard (SC 507)