COUNTING JUMPING CURVES OF VECTOR BUNDLES

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Abstract

Every vector bundle on $\mathbb{P}^1$ decomposes as a direct sum of line bundles. One can study a vector bundle $E$ on $\mathbb{P}^n$ by studying how this decomposition varies when one restricts $E$ to lines. The varieties where the decomposition type changes, the varieties of jumping lines, exhibit a rich geometry.

In this talk I will describe how one can compute the invariants of varieties of jumping curves when one generalizes this construction to higher degree rational curves and vector bundles on other projective varieties. I will describe these invariants in some interesting cases like the Horrocks-Mumford bundle on $\mathbb{P}^4$ and the tautological bundles of Grassmannians. These computations resolve some classical enumerative geometry problems and have applications for the quantum cohomology of flag varieties.

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Room 383-N

http://math.stanford.edu/~vakil/s0405/