Queen's Algebraic Geometry
— Seminar —

CUP PRODUCT ON COMPLETE FLAG VARIETIES

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Abstract

Let G be a semisimple algebraic group, B a Borel subgroup, and $X = G/B$. If L is a line bundle on X then by the Borel-Weil-Bott theorem there is at most one value of d for which the cohomology group $H^d(X, L)$ is nonzero. Given two line bundles L_1 and L_2 with nonzero cohomologies in degrees d_1 and d_2, it is natural to look at the cup-product map

$$H^{d_1}(X, L_1) \otimes H^{d_2}(X, L_2) \to H^d(X, L)$$

where $d = d_1 + d_2$ and L is the tensor product $L_1 \otimes L_2$. By the Borel-Weil-Bott theorem, the cup product map is either surjective or zero, but it was not known how to tell which occurs.

The talk will give a complete answer in the A_n case, and partial answers for general semisimple G. Most of the talk will be an exposition of the Borel-Weil-Bott theorem and some of the geomety of the varieties G/B.

Monday, November 26, 2007

4:30pm – 5:30pm

319 Jeffery Hall