

QUANTUM KOSTKA AND THE RANK ONE PROBLEM FOR \mathfrak{sl}_{2m}

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JMM ABSTRACT

Vector bundles of conformal blocks on $\overline{M}_{g,n}$, the moduli space of stable n -pointed curves of genus g , are determined by a simple Lie algebra \mathfrak{g} , a positive integer ℓ , and an n -tuple $\vec{\lambda}$ of dominant integral weights for \mathfrak{g} at level ℓ . On $\overline{M}_{0,n}$ the bundles are globally generated, and their first Chern classes are base point free. The ranks of the bundles, when $\mathfrak{g} = \mathfrak{sl}_{r+1}$, can be computed using Schubert calculus. In this talk, using quantum Kostka and other tools, I classify ranks of \mathfrak{sl}_{2m} bundles with so-called rectangular weights. Using similar techniques I show that the subcone of the nef cone spanned by the infinite family of first Chern classes of bundles of rank one is actually polyhedral, the convex hull of a finite number of extremal rays.

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