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Degeneration of Holomorphic Sections to Bohr-Sommerfeld points for Moduli of SL(2,C) Bundles

The moduli spaces of $\mathrm{SL}(2,\mathbb{C})$ bundles on a compact Riemann surface ($g > 1$) are one example of the invariance of polarization principle: Jeffrey and Weitsman showed the number of Bohr-Sommerfeld points is equal to the Verlinde formula, which counts the dimension of the Kähler quantization. This is a numerical equivalence, but there is no canonical isomorphism taking holomorphic sections to Bohr-Sommerfeld points. Their proof uses a moment polytope coming from the Goldman flows associated to a trinion decomposition of the Riemann surface, but existing proofs of the Verlinde formula are not clearly related to this polytope.

Biswas and Hurtubise recently showed that by degenerating the Riemann surface along a trinion decomposition, one obtains a degeneration of the moduli space to a toric variety of framed parabolic bundles. In this talk, we discuss how to use this degeneration at the level of holomorphic sections to degenerate a section over the moduli space into a section over the toric variety, which is directly related to the Bohr-Sommerfeld points via standard toric-geometric results. This also provides another proof of the Verlinde formula, via the moment polytope defined by the Goldman flows.