

Flat Connections on Riemann surfaces (revisited)

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Abstract: Let G be a connected, semi-simple compact Lie group. In this talk I will describe a stability theorem for the homology of the moduli space, M_g^G , of equivalence classes of triples (S, E, ω) , where S is a closed Riemann surface of genus g , $E \rightarrow S$ is a principal G -bundle, and ω is a flat connection on E . We will also give a calculation of the homology of this moduli space in the stable range. This work combines classical results of Atiyah and Bott, with new work of Madsen and Weiss which proved a famous conjecture of Mumford. I will spend some time in this lecture recalling these important works. I will also draw implications to moduli spaces of stable holomorphic bundles, and to representation varieties. This is all joint work with S. Galatius and N. Kitchloo.