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Colored moduli spaces of flat connections

Suppose $\mathfrak{g}$ is a Lie algebra carrying an invariant bilinear form. If Σ is an oriented surface, then Atiyah and Bott famously showed that the moduli space of flat $\mathfrak{g}$ connections over Σ carries a symplectic form. In this talk we will show how to construct this moduli space using finite dimensional techniques. We will be particularly interested in surfaces with boundary (and corners), and will want to color each boundary component with coisotropic subalgebras of $\mathfrak{g}$. From this perspective, interesting algebraic structures on $\mathfrak{g}$ (for instance a decomposition as the double of a Lie bialgebra) will reveal themselves as algebraic structures on the moduli spaces (for instance, the double symplectic groupoid structure integrating the double of a Lie bialgebra). This is work in progress with Pavol Severa.