

# Geometry and Topology

## Quantization of Moduli Spaces and Quantum Chern-Simons Theory

**Jørgen Ellegaard Andersen**  
Aarhus University, Denmark

We will in this talk discuss quantization of moduli spaces of flat connections, both for compact and non-compact Lie groups. In the case of compact groups, one obtains finite rank vector bundles with projectively flat connections over Teichmüller spaces. For the non-compact groups, one needs to use Hitchin's Higgs bundle description of the moduli spaces and his hyper-kähler structure on these moduli space. In this case one obtains infinite rank vector bundles, which however have gradings and also flat connections. Finally, we will discuss how these constructions are related to quantum Chern-Simons theory.