

# QUANTUM CHARACTER VARIETIES

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Abstract: Among the many applications of quantum groups are the constructions by Reshetikhin–Turaev of topological invariants (links invariants and representations of mapping class groups), and the quantization of the Atiyah–Bott Poisson structure on character varieties of surfaces by several authors. In this talk I will present an explicit description using factorization homology of a canonical quantization of the category of sheaves on character varieties, the quantization of the underlying varieties being recovered by taking global sections. This recovers in a purely topological fashion several important algebras associated with quantum groups, like the so-called braided dual and the algebra of quantum differential operators on the underlying group. Those categories form the two dimensional part of a certain partially defined 4 dimensional topological field theory which in turn is expected to recover Reshetikhin–Turaev’s construction as some sort of boundary condition. This is based on joint works with D. Ben-Zvi and D. Jordan and N. Snyder.