

1070-57-310

**Charles D. Frohman** and **Joanna Kania-Bartoszyńska\***, jkaniaba@nsf.gov. *Torsion, A-polynomial and quantum invariants of knots.*

Given a knot in the 3-sphere with a sufficiently regular character variety, we describe a chain complex (following Dubois) whose torsion yields a knot invariant. This invariant is used to define a seminorm on the Kauffman bracket skein algebra of the boundary torus for the knot complement. The radical of this seminorm is the ideal of functions that vanish on the image of the irreducible representations of the knot complement in the character variety of the torus. We derive a global formula for the seminorm that looks like the Witten-Reshetikhin-Turaev invariant of the skein in the double of the knot complement. This leads us to a conjectural characterization of the A-polynomial of knots with sufficiently regular character varieties in terms of quantum invariants. The conjecture is supported by the fact that the Dubois' torsion of a knot is a geometrically motivated evaluation of the square root of the Reidemeister torsion of the double of the knot complement. (Received February 15, 2011)