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Non semi-simple $sl(2)$ quantum invariants

In the last few years, C. Blanchet, F. Costantino, B. Patureau, V. Turaev and myself (in various collaborations) have developed a theory of renormalized quantum invariants of links and 3-manifolds which lead to TQFTs. This talk will start out by giving an overview of this work. In the second part of the talk I will discuss the renormalized quantum invariants of links coming from quantized $sl(2)$ at a root of unity. These link invariants contain Kashaev's quantum dilogarithm invariants of knots, the Akutsu-Deguchi-Ohtsuki invariant of links and the multi-variable Alexander Polynomial. Moreover, these re-normalized invariants of knots are meromorphic functions whose residues are closely related to the colored Jones polynomials.