# RENORMALIZED QUANTUM DIMENSION AND MULTIVARIABLE LINK INVARIANTS ABSTRACT

CRISTINA ANA-MARIA ANGHEL

PARIS DIDEROT UNIVERSITY

In this talk we will describe the multivariable link invariants introduced by N. Geer and B. Patureau in [2] and their relations with other previously known polynomial type invariants. This construction has as an algebraic input a super Lie algebra of type one. Because of the algebraic particularities of this kind of algebras, the classical Reshetikhin-Turaev construction vanishes, the reason being the fact that the quantum dimension of an object is often zero. First of all, we will present the definition of the renormalized quantum dimension, which in a Reshetikhin-Turaev type construction leads to non-vanishing invariants. After that, we will explain the polynomial behavior of this renormalized construction and the Geer and Patureau's multivariable link invariants. Secondly, we will present how the renormalized multivariable invariants recover the multivariable Alexander polynomials, specialize to the ADO invariants [1] and contain the Kashaev's invariants [3].

[1] Y. Akutsu, T. Deguchi, and T. Ohtsuki - Invariants of colored links. J. Knot Theory Ramifications 1 (1992), no. 2, 161-184.

[2] N. Geer, B. Patureau Multivariable link invariants arising from Lie super algebras of type I, Journal of Knot Theory and Its Ramifications, Vol. 19, No. 1 (2010), 93-115.

[3] N. Geer, B. Patureau-Mirand, On the Colored HOMFLY-PT, Multivariable and Kashaev Link Invariants, Commun. Contemp. Math., 10 (2008), suppl. 1, 993-1011.