Geometry, Physics, and Representation Theory
Northeastern University

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Knots, subfactors and quantum groups

Abstract.
I will talk about the appearance of Jones polynomial from subfactors and quantum SU(2). For quantum SU(N), O(N) and Sp(2N), the corresponding knot invariants and subfactors are known as HOMfLYPT, Kauffman polynomials and Jones-Wassermann, BMW subfactors respectively. I give a classification of next complicated subfactors and discover a new one parameter family. Infinitely many new subfactors and (unitary) fusion categories, therefore three manifold invariants, are derived from this family. In particular, two families of those fusion categories can be thought of as (representation categories of) exceptional subgroups of quantum SU(N) at level N+2 and N-2.