Representation categories of quantum groups and computational approaches

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Symmetries are usually modelled by groups. However, in many modern contexts new kinds of symmetries arise and one is obliged to consider quantum groups. I will briefly survey some aspects of noncommutative mathematics and give a short introduction to compact quantum groups as defined by Woronowicz in the 1980s. In this context, interesting representation categories arise resembling Brauer algebras in terms of their combinatorics. I will present some recent work in this direction highlighting computational aspects using GAP and SINGULAR amongst others.

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