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Quantum groups and liberation of orthogonal matrix groups

The main topic of my talk will be the liberation (i.e., finding the right kind of quantum version of) classical orthogonal matrix groups. Tanaka–Krein duality says that such (quantum) groups can be identified by its representations, in the form of the tensor category of its intertwiners. In the case of subgroups of orthogonal matrix groups these intertwiners can be described in terms of partitions. Liberation corresponds then to going over to non-crossing partitions. Naturally, there is some relation between such free quantum groups and free probability theory.

I will present the results of a joint work with Teodor Banica where we classify some special classes of classical and corresponding free quantum groups.