

# Probabilistic Operator Algebra Seminar

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July 20    **Floris Elzinga**, University of Oslo

Title: *Free Orthogonal Groups and Strong 1-Boundedness*

The free orthogonal quantum groups, depending on a parameter matrix  $Q$ , form an accessible class of examples of compact quantum groups, which can be viewed as analogues of both the real orthogonal groups and certain free product groups. In fact, a particularly well-behaved subclass, where the parameter matrix is conjugate to either an identity  $I_M$  or standard symplectic  $J_{2N}$ , shares many von Neumann algebraic properties with the free groups. A natural question is then whether these objects are distinguishable on the von Neumann algebraic level. Recently Brannan and Vergnioux managed to show that in case  $Q = I_M$  these operator algebras satisfy a free-probabilistic property called strong 1-boundedness, which the free group factors do not. Their proof employs techniques from the theory of compact quantum groups, free probability, and the quantum analogue of Cayley graphs. We will review the necessary notions and explain how the techniques of Brannan and Vergnioux can be extended to also cover the remaining case  $Q = J_{2N}$ .