

VENTURING TO THE BOUNDARY WITH BRAIDED MODULE CATEGORIES

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While the relationship between braided monoidal categories and quantum groups has successfully unlocked deep connections in knot theory and the Yang–Baxter equation, extending this framework to boundary phenomena requires shifting our focus to braided module categories. This talk explores this boundary setting first by introducing the “reflective center” of a module category, showing how it naturally produces solutions to the boundary Yang–Baxter equation (also known as the quantum reflection equation). We will then examine when braided module categories are “nondegenerate”, which is analogous to the notion for braided finite tensor categories used to construct 3d-TQFTs. Finally, we will present concrete connections to braid groups of type BC and D , mirroring the classic connections to braid groups of type A . This is based on recent work with Monique Müller, Robert Laugwitz, Harshit Yadav, and Milen Yakimov.