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## Chelsea Walton: Reflective centers of module categories and quantum K-matrices

*Tuesday 29 August 2023 11:15 (1 hour)*

This talk will be on recent joint work with Robert Laugwitz and Milen Yakimov (arXiv:2307.14764) that is motivated by obtaining solutions to the quantum reflection equation (qRE). To start, given a braided monoidal category  $C$  and  $C$ -module category  $M$ , we introduce a version of the Drinfeld center  $Z(C)$  of  $C$  adapted for  $M$ . We refer to this category as the “reflective center”  $E_C(M)$  of  $M$ . Just like  $Z(C)$  is a canonical braided monoidal category attached to  $C$ , we show that  $E_C(M)$  is a canonical braided module category attached to  $M$ . When  $C$  is the category of modules over a quasitriangular Hopf algebra  $H$ , and  $M$  is the category of modules over an  $H$ -comodule algebra  $A$ , we show that  $E_C(M)$  is equivalent to a category of modules over an explicit algebra, which we call the “reflective algebra”  $R_H(A)$  of  $A$ . Here,  $R_H(A)$  is akin to Drinfeld double of  $H$ . We show that reflective algebras are quasitriangular  $H$ -comodule algebras, and examine their corresponding quantum K-matrices (which are solutions to the qRE).