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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).