

# MODIFIED TRACES AND MONADIC COINTEGRALS FOR QUASI-HOPF ALGEBRAS

JOHANNES BERGER

Abstract: In an effort towards defining non-semisimple quantum invariants, [Geer, Kujawa, Patureau-Mirand '10 . . .] and others introduced the notion of “modified traces on ideals in pivotal finite tensor categories”. Disconnected from that, [Shimizu '17] introduced the “categorical cointegral” for any finite tensor category, and “monadic cointegrals”, finally, are in a sense dual to what Shimizu proposed. The modified trace (on the projective ideal) and the monadic cointegral are used in defining non-semisimple invariants of three-manifolds with embedded ribbon graphs [De Renzi, Geer, Gainutdinov, Patureau-Mirand, Runkel '19].

In this talk, I want to first review the objects of interest mentioned above. Then we will specialize to representations categories of (pivotal) quasi-Hopf algebras, and I will explain how both the monadic cointegrals as well as the ‘canonical’ non-degenerate modified traces for this category are related to the classical quasi-Hopf cointegrals introduced by [Hausser, Nill '99].