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Trace as an alternative decategorification functor

Abstract: Categorification is a lifting of a given mathematical structure to a higher categorical level. Decategorification is the inverse process of simplifying higher structure into the original one. Both procedures are not unique. Usually, the Grothendieck group K_0 is used as a decategorification functor. In this talk, we illustrate on the example of categorified quantum groups that the trace or 0th Hochschild homology is an interesting alternative to K_0. We show that duality between trace and center gives rise to an action of the current algebra Usl(n)[t] on the center of any 2-representation of the categorified quantum sl(n). This was previously observed by Brundan for t=1.