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A trace-like invariant for representations of Hopf algebras.

Given a complex Hopf algebra H , we consider a trace-like invariant determined by the antipode on each finite dimensional representation of H . When H is semisimple this invariant is closely related to the Frobenius-Schur indicator of the representation and can be used to compute the indicator. For Hopf algebras that are not semisimple this invariant provides a new tool to study their representation theory. In this case the trace is an algebraic integer that is not necessarily an integer.

We study some of its properties and determine the values of this trace for the representations of some families of Hopf algebras, including $u_q(sl_2)$, the Drinfeld doubles of the Taft algebras and nilpotent liftings of quantum planes. Part of this is joint work with Leonid Krop. (Received September 11, 2009)