

Recent results on Frobenius-Schur indicators for Hopf algebras

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Let H be a semisimple Hopf algebra over \mathbb{C} , and let V be an irreducible representation of H . It is known that for each integer n , $1 \leq n \leq \text{Exp}(H)$, one may define $\nu_n(V)$, the n^{th} Frobenius-Schur indicator of V , generalizing the facts for representations of finite groups. The indicators are a useful invariant for the category of representations, as they are gauge invariants, and have had nice applications.

Although for $H = \mathbb{C}G$, all values of $\nu_n(V)$ are integers, this is not true in general although they must lie in the ring of n^{th} cyclotomic integers (as is shown by Kashina-Sommerhäuser-Zhu). It was hoped that for nice examples, such as $H = D(G)$, the Drinfel'd double, the values of $\nu_n(V)$ would still be integers.

Recently this has been shown to be true for $D(G)$ in many examples, such as when G is a dihedral group or a “regular” p -group. Computations with GAP show that it is also true for groups with “small” exponent, but that it is false for a group of order 5^6 .

We will survey some of these results, due variously to Rebecca Courter, Mio Iovanov, Marc Keilberg, Geoff Mason, Richard Siu-hung Ng, and the speaker.