On Cauchy's theorem for Hopf algebras

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Abstract: Cauchy's theorem states that a finite group contains an element of prime order for every prime that divides the order of the group. Since the exponent of a group is the least common multiple of the orders of all its elements, this can be reformulated by saying that a prime that divides the order of a group also divides its exponent. It was an open conjecture by P. Etingof and S. Gelaki that this result, in this formulation, holds also for semisimple Hopf algebras. In the talk, we present a proof of this conjecture, which is joint work with Y. Kashina and Y. Zhu.

The talk is intended for a general audience; in particular, no knowledge of Hopf algebras will be assumed. We will therefore begin by explaining what a Hopf algebra is and how the exponent of a Hopf algebra can be defined. We will then explain how the analogue of Cauchy's theorem can be deduced from the theory of higher Frobenius-Schur indicators.