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A CHARACTERIZATION OF IDEMPOTENT SCHUR MULTIPLIERS

The celebrated Cohen-Host idempotent theorem characterizes idempotents in the Fourier algebra as finite signed sums of indicators of cosets of open subgroups. Quantitative refinements due to Green-Sanders in the abelian case, and Sanders in the non-abelian setting, use tools from additive combinatorics to bound the number of cosets in terms of the Fourier algebra norm.

I will discuss the analogous problem for Schur multipliers. We prove that every idempotent Schur multiplier is a finite signed sum of contractive ones, with at most $2^{O(\gamma^4)}$ summands when the norm is at most γ . This answers a question of Katavolos and Paulsen from 2003.

After our paper was made public, Carenini observed that the main structural lemma in our proof can be applied to recover the Cohen-Host theorem and its quantitative refinements by a considerably simpler argument that avoids additive combinatorics. In the non-abelian case, this also improves Sanders's triple-exponential bound to a single-exponential one.

This talk is based on joint work with Csongor Beke, Marcel Goh, Sean Jaffe, and Daniel Naylor.