Mathematics, Statistics, and Computer Science **@ UIC**

Logic Seminar

Hindman's theorem and idempotent types

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Abstract: For a set A of natural numbers, let FS(A) denote the set of sums of finitely many distinct elements of A. A set B of natural numbers is said to be an IP set if B contains FS(A) for some infinite set A. A central result in combinatorial number theory is Hindman's theorem, which states that if one finitely colors an IP set, then at least one of the colors is an IP set. The slickest proof of this result uses idempotent ultrafilters. Di Nasso suggested a model-theoretic generalization of idempotent ultrafilters, aptly named idempotent types, and asked in what completions of PA idempotent types exist. In this talk, I will show that Hindman's theorem is actually equivalent to the existence of idempotent types in all countable complete extensions of PA. This has potential philosophical consequences that I will also discuss. This is joint work with Uri Andrews.

Tuesday, September 1 at 4:00 PM in SEO 427