

# An introduction to additive combinatorics

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(Tea 3:30 pm Math Lounge)

## Abstract

The birth of a new subject can rarely have been so spectacular as the developments in the last few years in “additive combinatorics”, a blend of combinatorics, harmonic analysis, discrete geometry, graph theory, group theory, analytic number theory, ergodic theory, probability theory, . . . . What with Gowers’ new and explicit proof of Szemerédi’s theorem developing a new type of harmonic analysis, Bourgain’s amazing exponential sum estimates, and the proof of Green and Tao that there are infinitely many  $k$ -term arithmetic progressions of primes, it is clear that there is enormous potential in this new area. In this talk we will introduce the central concerns, and maybe one or two proofs “from the book”, attempting to use ideas from all of the subject areas named above!