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*Additive Combinatorics and Ergodic Theory*

A beautiful result in combinatorial number theory is Szemerédi's Theorem: a set of integers with positive upper density contains arbitrarily long arithmetic progressions. In the 1970s, Furstenberg established the deep connections between combinatorics and ergodic theory, using ergodic theory to prove Szemerédi's Theorem. This development led to the field of Ergodic Ramsey Theory and many new combinatorial and number theoretic statements were proven using ergodic theory. In the last year, this interaction took a new twist, with ergodic methods playing an important role in Green and Tao's proof that the prime numbers contain arbitrarily long arithmetic progressions. I will give an overview of this interplay, with a focus on recent developments in ergodic theory.