MSRI–Evans Talk

Monday, 4:10–5:00pm, 60 Evans

Oct. 20 **Bryna Kra**, Northwestern University

Combinatorial Ergodic Theory

Much recent work in ergodic theory has been motivated by interactions with combinatorics and number theory. A striking example is Szemeredi's Theorem, which states that a set of integers with positive upper density contains arbitrarily long arithmetic progressions. Soon after Szemeredi's proof, Furstenberg gave an elegant proof using ergodic theory. This opened new questions in ergodic theory, and remarkably, it turns out that algebraic constraints (nilsystems) play a key role in governing these phenomena. In turn, these developments have led to breakthroughs in additive combinatorics and once again, nilsystems play a prominent role. I will give an overview of these recent interactions.