

Mathematics Department Colloquium

Organizer: Olga Holtz

Thursday, 4:10–5:00pm, 60 Evans

Nov. 6 **Tamar Ziegler**, Technion

Polynomial patterns in primes

Abstract: In 1995, Bergelson and Leibman proved, using ergodic theoretic methods developed by Furstenberg, a vast generalization of Szemerédi's theorem on arithmetic progressions establishing the existence of arbitrarily long polynomial progressions in subsets of the integers of positive density.

In a breakthrough in 2004, Green and Tao proved that the question of finding arithmetic progressions in the prime numbers - which are of zero density - can be reduced to that of finding arithmetic progressions in subsets of positive density. In recent work with T. Tao we show that one can make a similar reduction for polynomial progressions, thus establishing, through the Bergelson-Leibman theorem, the existence of arbitrarily long polynomial progressions in the prime numbers.

We discuss a general strategy for finding patterns in primes via ergodic Ramsey theory.