

MATH 607, SEMINAR ON ADDITIVE COMBINATORICS FALL 2008

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1. SYLLABUS

Additive combinatorics is a theory of counting additive structures in sets. A remarkable feature of this subject is the use of tools from many diverse areas of mathematics such as elementary combinatorics, number theory, harmonic analysis, graph theory, discrete geometry, probability, and ergodic theory. While the methods used in additive combinatorics are quite sophisticated, most results have very simple formulation. For example, the Szemerédi theorem states that any subset of positive integers with positive density has arbitrary long arithmetic progressions. A stunning result of Green and Tao says that primes have arbitrary long arithmetic progressions. The aim of this course is to give a flavor of this area. We will cover selected topics from the book of Tao and Vu "Additive Combinatorics", Cambridge Univ. Press, 2006.

2. GRADING

The final grade is 100% determined by the completion of homework assigned every 2–3 weeks. There is no final exam in this class.