Graz University of Technology

Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 23rd January 12:30

Online meeting (Webex) & AE06, Steyrergasse 30

Typical Ramsey properties of the primes and abelian groups

Robert Hancock

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Given a matrix A with integer entries, a subset S of an abelian group and integer r we say that S is (A, r)-Rado if any r-colouring of S yields a monochromatic solution to the system of equations $Ax = 0$. A classical result of Rado characterises all those matrices A such that the natural numbers are (A, r)-Rado for all integers r. Rödl and Ruciński and Friedgut, Rödl and Schacht proved a random version of Rado's theorem where one considers a random subset of $[n] := \{1, \dots, n\}$.

We investigate the analogous random Ramsey problem in the more general setting of abelian groups. Given a sequence S_n of finite subsets of abelian groups, let $S_{n,p}$ be a random subset of S_n obtained by including each element of S_n independently with probability p. We determine the probability threshold for $S_{n,p}$ being (A, r)-Rado for a number of interesting cases.

Joint work with Andrea Freschi (Alfréd Rényi Institute of Mathematics) and Andrew Treglown (University of Birmingham).

Webex link:

https://tugraz.webex.com/tugraz/j.php?MTID=maf534adc0b2d38dd1859e16cbc8d5f84

Mihyun Kang, Ronen Wdowinski