Combinatorics
Seminar

Graphs on Affine or Linear Points

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Abstract: Motivated by a question of Hajnal on independent finite sum-sets in triangle-free graphs with vertex sets being the set of positive integers we consider the following problem: Given are fixed integers k,l ¿ 0 and a finite field F. Given is any graph G = (V, E) with vertex set being the set of all affine or linear points of an n-dimensional affine or linear vector space over F, where G does not contain a complete graph on l vertices. Is it possible to find a k-dimensional subspace, such that the set of all its affine or linear points forms an independent set in G? Having answered this questions, we give some applications to the corresponding problem for the set of solutions of partition regular systems of linear equations over Abelian groups. This is some joint work with D. Gunderson.

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