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Extremal number of configurations in a grid

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Abstract: A *configuration* is a finite set of points with no three collinear. Two configurations have the same order type if there exists a bijection between these two configurations that preserves the orientation of every ordered triple. A configuration A contains a copy of a configuration B if some subset of A has the same order type of B and we denote this by $B \subset A$. For a configuration B and an integer m, the extremal number

$$ex(m, B) = \max\{|A| : \ B \not\subset A, A \subset [m]^2\}$$

is the maximum size of a subset of the grid $[m]^2$ without a copy of B. We discuss some bounds on this function for general B.

Monday, November 6, 2017, 4:00 pm

Mathematics & Science Center – W302

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EMORY UNIVERSITY