Erdős, Paul; Graham, Ron; Ruzsa, Imre Z.; Taylor, Herbert
Bounds for arrays of dots with distinct slopes or lengths. (In English)
Combinatorica 12, No.1, 39-44 (1992). [0209-9683]

Authors' abstract: An $n \times m$ sonar sequence is a subset of the $n \times m$ grid with exactly one point in each column, such that the $\binom{m}{2}$ vectors determined by them are all distinct. We show that for fixed n the maximal m for which a sonar sequence exists satisfies $n - Cn^{11/20} < m < n + 4n^{2/3}$ for all the n and $m > n + c \log n \log \log n$ for infinitely many n.

Another problem concerns the maximal number D of points that can be selected from the $n \times m$ grid so that all the $\binom{D}{2}$ vectors have slopes. We prove $n^{1/2} \ll D \ll n^{4/5}$.

J.R.Seberry (Lincoln)

Classification:
05B15 Orthogonal arrays, etc.
05B30 Other designs, configurations

Keywords:
arrays of dots; sonar sequence; slopes