Quasirandom Latin squares

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Abstract

A Latin square is an $n \times n$ matrix filled with values of $\{1, \ldots, n\}$ in such a way that each row and each column contains each value exactly once, respectively. We present a limit theory of Latin squares developed by Garbe et al. [arXiv:2010.07854], paralleling the recent limit theories of dense graphs and permutations.

Moreover, we prove that a Latin square is quasirandom if and only if the density of every 2×3 pattern is $1/720 + o(1)$. This result is the best possible in the sense that 2×3 cannot be replaced with 2×2 or $1 \times n$ for any n.

This is joint work with Jacob W. Cooper, Daniel Kráľ, and Ander Lamaison.