Exposé court

140 *Friable numbers are orthogonal to nilsequences*

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Call an integer $[y', y]$-friable if all its prime factors are in the interval $[y', y]$. In this talk, we will discuss the history of counting solutions to linear equations with friable number variables. Suppose that $K' \geq 1$ is a large integer and $y' = \log^{K'} N$. In joint work with Lilian Matthiesen, we show that the system of finite complexity linear equations always has a solution when the set of $[y', y]$-friable numbers is relatively dense. As part of the proof, we also prove that $[y', y]$-friable numbers are orthogonal to nilsequences (generalized polynomial phase functions) as long as $\log^{K} N \leq y \leq N$ and K/K' is sufficiently large.