Abstract: We will present a very nice breakthrough result of Mark Braverman which establishes that polynomially sized bounded depth circuits are “fooled” by $t$-independent distributions (for polylogarithmic $t$). In simpler words, for any circuit $C$ of size $m$ in this class, given any distribution $D$ of $n$-bit strings (elements in $\{0, 1\}^n$) such that the bits are $t$-wise independent ($t = \text{polylog}(m)$), the distribution of $C(D)$ is practically identical to that of $C(U)$, where $U$ is the uniform distribution.

This result was recently applied by E. Chattopadhyay and D. Zuckerman (2016) to essentially derandomize the binomial random graph $G(n, 1/2)$. As a corollary they now hold the record for the best bounds on Ramsey graphs explicitly constructed by an algorithm.