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Sharp thresholds for Ramsey properties

Given graphs G and H and an integer $r \geq 2$, write $G \rightarrow (H)_r$ if every r -colouring of the edges of G contains a monochromatic copy of H . Ramsey's theorem states that, when n is sufficiently large, $G \rightarrow (H)_r$ is a nontrivial, monotone property of subgraphs of K_n . The celebrated work of Rödl and Ruciński located the threshold for this property in the random graph $G_{n,p}$ for all H and r . We prove that this threshold is sharp when H is a clique or a cycle.

Joint work with Ehud Friedgut, Eden Kuperwasser, and Mathias Schacht.