Biclique decomposition of random graphs

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The biclique partition number $bp(G)$ is the minimum number of complete bipartite graphs needed to partition the edges of a graph $G$. It is not hard to see that $bp(G) \leq n - \alpha(G)$, where $\alpha(G)$ is the independence number. Erdős conjectured that for the random graph $G = G(n, 0.5)$, $bp(G) = n - \alpha(G)$ with high probability. In this talk I will discuss some recent progress and remaining challenges in this area, and show that actually there exists an absolute constant $c > 0$ such that for $G = G(n, 0.5)$, $bp(G) \leq n - (1 + c)\alpha(G)$ with high probability. Joint work with Noga Alon and Tom Bohman.