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.