

Embedding the Erdős-Rényi random graph into the random regular graph

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2004 Kim and Vu conjectured that if $d \gg \log n$ as n tends to infinity, then one can “sandwich” a random d -regular graph $\mathbb{G}(n, d)$, that is, a graph with all vertex degrees d , between two Erdős-Rényi random graphs $\mathbb{G}(n, p_1)$ and $\mathbb{G}(n, p_2)$, both of which have expected degrees asymptotically equal to d . By “sandwiching” we mean a joint distribution of the three random graphs such that with high probability $\mathbb{G}(n, p_1) \subset \mathbb{G}(n, d) \subset \mathbb{G}(n, p_2)$. Recently Dudek, Frieze, Ruciński and Šileikis proved the lower embedding, i.e., that $\mathbb{G}(n, p_1) \subset \mathbb{G}(n, d)$ with high probability, provided $d \ll n$. We extend this result to random bipartite graphs using a new approach that also gives an embedding for $d \sim cn$, $0 < c < 1$. Joint work with T. Klímošová, C. Reiher, and A. Ruciński.