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Rainbow Hamilton cycles in random graphs

We show that in the setting of randomly edge-colored Erdős-Rényi random graphs, a rainbow-colored Hamilton cycle appears under conditions that are asymptotically best-possible. Specifically, when the edges of $G_{n,p}$ are randomly colored from a set of $(1+o(1))n$ colors, with $p = (1+o(1))\frac{\log n}{n}$, w.h.p. there exists a Hamilton cycle which has the further property that all edges are distinctly colored (rainbow). This improves earlier bounds of Cooper and Frieze.

Joint work with Alan Frieze.