

Offline thresholds for online games

Reto Spoehel (joint with with Michael Krivelevich and Angelika Steger)

Abstract

We compare the offline versions of three Ramsey-type one-player games that have been studied in an online setting in previous work: the online Ramsey game, the balanced online Ramsey game, and the Achlioptas game. The goal in all games is to color the edges of the random graph $G_{n,m}$ (a graph drawn uniformly at random from all graphs on n vertices with exactly m edges) according to certain rules without creating a monochromatic copy of some fixed forbidden graph H . While in general the three online games have different thresholds, we prove that for most graphs H , the offline threshold for all three problems is $m_0(n) = n^{2-1/m_2(H)}$, where $m_2(H) := \max_{H' \subseteq H} (e_{H'} - 1)/(v_{H'} - 2)$.