

Subgraphs of semirandom graphs

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The semi-random graph process can be thought of as a one player game. Starting with an empty graph on n vertices, in each round a random vertex u is presented to the player, who chooses a vertex v and adds the edge uv to the graph. Given a graph property, the objective of the player is to force the graph to satisfy this property in as few rounds as possible.

We will consider the property of constructing a fixed graph G as a subgraph of the semi-random graph. Ben-Eliezer, Hefetz, Kronenberg, Parczyk, Shikhelman and Stojacovic proved that the player can asymptotically almost surely construct G given $\gg n^{1-1/d}$ rounds, where d is the degeneracy of the graph G . We prove a matching lower bound. I will talk about this result, and also discuss a generalisation of our approach to semi-random hypergraphs. I will finish with some open questions.