

Perfect Matchings in $O(n)$ Time in Random Graphs

Pascal Su*

joint work with Rajko Nenadov[†] and Angelika Steger[†]

Abstract

We provide a randomized algorithm that finds a perfect matching in $O(n)$ time in expectation and with high probability in a random graph $G_{n,p}$ with density $p \geq C \log n/n$. This improves upon a classical result of Angluin and Valiant from 1979. Our model assumes that the graph is given to the algorithm in form of randomly ordered adjacency lists.

Keywords: random graphs, perfect matchings, sublinear algorithm

*Department of Computer Science, ETH Zurich, Switzerland. Email: asteger|sup@inf.ethz.ch.

[†]School of Mathematical Sciences, Monash University, Australia. Email: rajko.nenadov@monash.edu.