Title: Chromatic Coding
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Abstract

I will describe a new algorithmic technique which is based on the simple fact that the probability that a random $2k$-vertex-coloring of a graph (on any number of vertices) with less than $k^2$ edges is proper exceeds $2^{-\Theta(k)}$, and that one can construct an explicit set of at most $2^{\tilde{O}(k) \log n}$ $2k$-colorings of $[n] = \{1, 2, \ldots, n\}$, so that any graph on the set of vertices $[n]$ with at most $k^2$ edges is properly colored in at least one of them. The algorithmic applications will be illustrated by focusing on the example of deciding, in polynomial time, if one can delete at most $\tilde{O}(\log^2 n)$ edges from an $n$-vertex tournament to make it acyclic.

Joint work with D. Lokshtanov and S. Saurabh.