

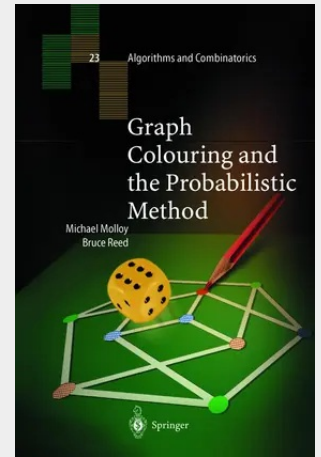
Graph Colouring and the Probabilistic Method

Over the past decade, many major advances have been made in the field of graph colouring via the probabilistic method. This monograph provides an accessible and unified treatment of these results, using tools such as the Lovasz Local Lemma and Talagrand's concentration inequality.

The topics covered include: Kahn's proofs that the Goldberg-Seymour and List Colouring Conjectures hold asymptotically; a proof that for some absolute constant C , every graph of maximum degree Δ has a $\Delta+C$ total colouring; Johansson's proof that a triangle free graph has a $O(\Delta \text{ over } \log \Delta)$ colouring; algorithmic variants of the Local Lemma which permit the efficient construction of many optimal and near-optimal colourings.

This begins with a gentle introduction to the probabilistic method and will be useful to researchers and graduate students in graph theory, discrete mathematics, theoretical computer science and probability.

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