



Minisymposium 19 - Random Discrete Structures and Algorithms

Beyond Acyclic Colorings

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Acyclic colorings of graphs have received a lot of attention in recent years and the probabilistic method has been applied to them quite successfully. The first notable probabilistic result about acyclic colorings is certainly Alon, McDiarmid and Reed's proof that every graph of maximum degree Δ can be acyclically (and properly) colored using $O(\Delta^{\frac{4}{3}})$ colors which implied a conjecture of Erdős. The deepest non-probabilistic result about acyclic colorings is probably Borodin's proof that every planar graph has an acyclic 5-coloring. Extending acyclicity Borodin conjectured in 1976 that every planar graph has a 5-coloring such that the union of every k color classes with $1 \leq k \leq 4$ induces a k -degenerate graph. We present results related to this conjecture.