

# New algorithms for acyclic and star coloring

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## Abstract for a Poster

Acyclic and star coloring problems are specialized vertex coloring problems that arise in the efficient computation of Hessians using automatic differentiation, when both sparsity and symmetry are exploited. Both problems are known to be NP-hard. We present a new common algorithmic paradigm for finding heuristic solutions for the two problems. For the acyclic coloring problem, our approach gives the first efficient algorithm; for the star coloring problem, our algorithm improves on the time complexity of a previously known method. Experimental results that demonstrate the performance of the algorithms will also be presented.