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Summary: We use a new approximation measure, the differential approximation ratio, to derive polynomial-time approximation algorithms for minimum set covering (for both weighted and unweighted cases), minimum graph coloring and bin-packing. We also propose differential-approximation-ratio preserving reductions linking minimum coloring, minimum vertex covering by cliques, minimum edge covering by cliques and minimum edge covering of a bipartite graph by complete bipartite graphs.

MSC:
68W10 Parallel algorithms in computer science

Keywords:
NP-complete problem; polynomial time approximation algorithm; set covering; coloring; bin-packing

Full Text: DOI

References:
[8] de la Vega, W.Fernandez; Lueker, G.S., Bin packing can be solved within 1 + \textit{ε} in linear time, Combinatorica, 1, 4, 349-355, (1981) · Zbl 0485.68057
[18] Lund, C.; Yannakakis, M., On the hardness of approximating minimization problems, (), 286-293 · Zbl 1310.68094