

**Khuller, Samir; Moss, Anna; Naor, Joseph****The budgeted maximum coverage problem.** (English) Zbl 1002.68203

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Summary: The budgeted maximum coverage problem is: given a collection  $S$  of sets with associated costs defined over a domain of weighted elements, and a budget  $L$ , find a subset  $S'$  of  $S$  such that the total cost of the sets in  $S'$  does not exceed  $L$ , and the total weight of the elements covered by  $S'$  is maximized. This problem is NP-hard. For the special case of this problem where each set has unit cost, a  $(1 - 1/e)$ -approximation is known. Yet, prior to this work, no approximation results were known for the general cost version. The contribution of this paper is a  $(1 - 1/e)$ -approximation algorithm for the budgeted maximum coverage problem. We also argue that this approximation factor is the best possible, unless  $\text{NP} \subseteq \text{DTIME}(n^{O(\log \log n)})$ .

**MSC:**[68W25](#) Approximation algorithms[68W40](#) Analysis of algorithms[68Q17](#) Computational difficulty of problems (lower bounds, completeness, difficulty of approximation, etc.)Cited in **3** Reviews  
Cited in **59** Documents**Keywords:**[budgeted maximum coverage problem](#)**Full Text:** [DOI](#)