

**Title:** A Local Search Algorithm for the Min-Sum Submodular Cover Problem

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**Abstract:** The (weighted) Min-Sum Submodular Cover problem generalizes the NP-complete Min-Sum Set Cover problem, replacing the input set cover instance by an oracle for a monotone submodular set function, and including costs for the items in the set. We generalize work of Munagala et al. [ICDT, 2005] to give a local search algorithm for the (weighted) Min-Sum Submodular Cover problem. This algorithm achieves a  $(4 + \epsilon)$ -approximation in time in  $O(n^3 \log(n/\epsilon))$ , provided that the monotone submodular set function is also second-order supermodular. Second-order supermodularity has previously been shown to hold for a number of monotone submodular functions of practical interest, including functions associated with Set Cover and Weighted Matching.

This is joint work with Lisa Hellerstein and Thomas Lidbetter