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### Near-Linear Approximation Algorithms for Geometric Hitting Sets

Given a set system  $(X, \mathfrak{R})$ , the *hitting set* problem is to find a smallest-cardinality subset  $H \subseteq X$ , with the property that each range  $R \in \mathfrak{R}$  has a non-empty intersection with  $H$ . We present near-linear time approximation algorithms for the hitting set problem, under the following geometric settings: (i)  $\mathfrak{R}$  is a set of planar regions with small union complexity. (ii)  $\mathfrak{R}$  is a set of axis-parallel  $d$ -rectangles in  $d$ -space. In both cases  $X$  is either the entire  $d$ -dimensional space or a finite set of points in  $d$ -space. The approximation factors yielded by the algorithm are small; they are either the same as or within an  $O(\log n)$  factor of the best factors known to be computable in polynomial time.