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**Building an optimal point-location structure in  $O(\text{sort}(n))$  I/Os.** (English) Zbl 1421.68029  
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Summary: We revisit the problem of constructing an external memory data structure on a planar subdivision formed by  $n$  segments to answer point location queries optimally in  $O(\log_B n)$  I/Os. The objective is to achieve the I/O cost of  $\text{sort}(n) = O(\frac{n}{B} \log_{M/B} \frac{n}{B})$ , where  $B$  is the number of words in a disk block, and  $M$  being the number of words in memory. The previous algorithms are able to achieve this either in expectation or under the tall cache assumption of  $M \geq B^2$ . We present the first algorithm that solves the problem deterministically for all values of  $M$  and  $B$  satisfying  $M \geq 2B$ .

**MSC:**

**68P05** Data structures

**68U05** Computer graphics; computational geometry (digital and algorithmic aspects)

**Keywords:**

point location queries; bulkloading; external memory; computational geometry

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