题目：Constrained Heterogeneous Two-facility Location Games with Max-variant Cost

摘要：In this paper, we propose a constrained heterogeneous facility location model where a set of alternative locations are feasible for building facilities and the number of facilities built at each location is  
limited. Supposing that a set of agents on the real line can strategically report their locations and each agent’s cost is her distance to the further facility that she is interested in, we study deterministic mechanism design without money for constrained heterogeneous two-facility location games.  
  Depending on whether agents have optional preference, the problem is considered in two settings: the compulsory setting and the optional setting. In the compulsory setting where each agent is served by the two  
heterogeneous facilities, we provide a 3-approximate deterministic group strategyproof mechanism for the sum/maximum cost objective respectively, which is also the best deterministic strategyproof mechanism under the corresponding social objective. In the optional setting where each agent can be interested in one of the two facilities or both, we propose a deterministic group strategyproof mechanism with approximation ratio of at most 2n + 1 for the sum cost objective and a deterministic group strategyproof mechanism with approximation ratio of at most 9 for the maximum cost objective.

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