Data Collection with Bounded-Sized Messages in Wireless Sensor Networks

Authors : Min Kyung An

Abstract : In this paper, we study the data collection problem in Wireless Sensor Networks (WSNs) adopting the two interference models: The graph model and the more realistic physical interference model known as Signal-to-Interference-Noise-Ratio (SINR). The main issue of the problem is to compute schedules with the minimum number of timeslots, that is, to compute the minimum latency schedules, such that data from every node can be collected without any collision or interference to a sink node. While existing works studied the problem with unit-sized and unbounded-sized message models, we investigate the problem with the bounded-sized message model, and introduce a constant factor approximation algorithm. To the best known of our knowledge, our result is the first result of the data collection problem with bounded-sized model in both interference models.

Keywords : data collection, collision-free, interference-free, physical interference model, SINR, approximation, bounded-sized message model, wireless sensor networks
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