

Efficient Broadcasting in Wireless Sensor Networks

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Abstract : In this paper, we study the Minimum Latency Broadcast Scheduling (MLBS) problem in wireless sensor networks (WSNs). The main issue of the MLBS problem is to compute schedules with the minimum number of timeslots such that a base station can broadcast data to all other sensor nodes with no collisions. Unlike existing works that utilize the traditional omnidirectional WSNs, we target the directional WSNs where nodes can collaboratively determine and orientate their antenna directions. We first develop a 7-approximation algorithm, adopting directional WSNs. Our ratio is currently the best, to the best of our knowledge. We then validate the performance of the proposed algorithm through simulation.

Keywords : broadcast, collision-free, directional antenna, approximation, wireless sensor networks

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