

论文

## 基于感知距离调节的无线传感器网络节能区域覆盖

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摘要

传感器节点能够感知的物理世界的最远距离称为节点的感知距离。该文研究了基于节点感知距离调节的无线传感器网络节能区域覆盖方案, 该方案通过设定合理的节点感知距离, 使得传感器网络在满足区域覆盖要求的同时, 能量消耗最低。首先将区域覆盖性能和网络能量消耗模化成网络节点感知距离的函数, 然后将节能覆盖问题模化成带约束条件的优化问题, 最后给出了基于网络区域划分的优化模型求解方法。仿真结果表明, 与传统覆盖方案比较, 所提方案在满足覆盖要求的同时, 有效降低了网络能量消耗。

关键词 [无线传感器网络](#) [区域覆盖](#) [能量有效](#) [感知距离](#)

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## Energy-Efficient Area Coverage in Wireless Sensor Networks with Adjustable Sensing Ranges

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Abstract

Sensing range is the maximum range within which a sensor node can detect a target. This paper proposes an energy-efficient scheme for area coverage in wireless sensor networks with adjustable sensing ranges. The scheme assigns reasonable sensing ranges to the network of nodes to minimize the energy consumption and meanwhile meet the coverage requirement. Firstly, the coverage capability and energy consumption are formulated as functions of node sensing ranges; Then, the area coverage issue is formulated as a constrained optimal model; Finally, a area-divided-based method is developed to solve the problem. Simulated results show that, compared with traditional method, the proposed scheme can efficiently save energy with satisfactory area coverage.

Key words [Wireless sensor network](#) [Area coverage](#) [Energy efficiency](#) [Sensing range](#)

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