

## 一种无线传感器网络数据收集协议的研究与优化

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摘要:

PEADG (Power Efficient Algorithm for Data Gathering) 协议是基于WSN的抄表系统数据收集协议, PEADG协议建立的网络拓扑结构由多棵树组成, 树根节点分担了网络负载, 较好地延长了网络生命期, 但PEADG协议仍然存在一些问题, 如: 没有考虑多棵树上节点个数的平衡等。本文针对协议中存在的问题, 提出了三方面的改进: (1) 平衡了拓扑结构中多棵树的网络负载; (2) 增加了对节点剩余能量的考虑; (3) 利用基站收集了网络拓扑信息。利用MATLAB工具对改进后的协议进行了仿真, 结果表明改进后的协议延长了网络的生命期。

关键词: 无线传感器网络(WSN); 数据收集协议; PEADG协议; MATLAB仿真

## The Research and Optimization of Wireless Sensor Network Data Gathering Protocol

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**Abstract:**

PEADG (Power Efficient Algorithm for Data Gathering) is a data collection protocol of the meter reading system based on Wireless Sensor Network (WSN). The network topology of PEADG protocol is composed of a set of trees. The root nodes balance the network load, and effectively extend the lifetime of the network. However, PEADG still exist some problems such as: does not consider the balance of the number of nodes on multi-trees. In this paper, we focus on the problems existed in PEADG, and propose some improvements from three aspects: (1) balance the network load of multi-tree in the topology; (2) consider the residual energy of nodes; (3) collect network topology information by using base station. The simulation results by MATLAB tools show that the improved protocol extends the lifetime of the network.

**Keywords:** WSN; Data Gathering Protocol; PEADG; MATLAB Simulating

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