

网络、通信与安全

## 不均匀簇无线传感器网络高效节能通讯协议

陈成, 黄东军

中南大学 信息学院, 长沙 410083

收稿日期 修回日期 网络版发布日期 2007-7-20 接受日期

**摘要** 把无线传感器网络中的节点组织成簇能够有效的利用节点有限能量获得较长生命周期。传统随机成簇策略因忽视簇头负载差异而使能耗较高。针对这一问题, 提出了基于不均匀簇的无线传感器网络高效节能数据通讯协议 (Unequal Cluster size Protocol, UCP) 在成簇时将离基站较近的簇分配少的簇内节点, 而将离基站较远的簇分配更多的簇内节点。这样, 离基站较远的簇头节点相比离基站较近的簇头节点在数据聚合时会消耗更多的能量, 但是由于离基站近的簇不仅要聚合簇内节点的数据, 而且还要转发离基站较远的簇头聚合后的数据, 相比之下, 能量的消耗会趋近平衡, 而总体上每轮消耗的能量会更少。实验结果显示, UCP性能比MIT提出的LEACH协议性能好13%-16%。

**关键词** [无线传感器网络](#) [高效节能](#) [不均匀簇](#)

分类号

## Transmission protocol based on unequal cluster size for wireless sensor networks

CHEN Cheng, HUANG Dong-jun

College of Information Science and Engineering, Central South University, Changsha 410083, China

### Abstract

Organizing wireless sensor networks into clusters enables the efficient utilization of the limited energy resources of the deployed sensor nodes. Conventional methods using random strategy on cluster formation tended to more energy consumption. Based on this observation, presents UCP, a distributed energy efficient protocol via unequal clustering size. Allocates more nodes for cluster head far away from the base than cluster head near the base. So the cluster heads far away from the base cost more energy than cluster heads near the base. Because the cluster heads near the base not only gather the data but also transfer the data for other cluster heads far away from the base, the energy dissipation of every cluster head nodes is balanced. Generally, the total energy dissipation will be less than the conventional methods. Simulation results show that UCP's performance is better than the performance of LEACH (proposed by MIT) by 13%-16%.

**Key words** [wireless sensor networks](#) [energy-efficient](#) [unequal cluster](#)

DOI:

通讯作者 陈成

### 扩展功能

#### 本文信息

▶ [Supporting info](#)

▶ [PDF\(1059KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

#### 服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

#### 相关信息

▶ [本刊中包含“无线传感器网络”的相关文章](#)

▶ [本文作者相关文章](#)

· [陈成](#)

· [黄东军](#)