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# 一种能耗均衡的WSN分簇路由协议

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摘　要：

节能是WSN的研究热点之一，而路由协议对能耗有直接影响。在对已存在的分簇多跳路由协议进行分析的基础上，提出了一种考虑多种因素来均衡节点能耗的分簇多跳路由协议——EBCRP。EBCRP协议中，选择中继簇头时综合考虑了邻近簇头相对自身的距离和方向；加入经验因子使簇头概率随节点与Sink的距离成负指数变化；中继簇头进行一定时间的等待以便数据融合，等待时间与它到Sink的距离成反比；另外，还通过仿真确立了较优的轮转周期。仿真实验结果表明，EBCRP协议能够使网络第一个节点死亡时间明显延后，能耗更均衡，生命期更长。

关键词：无线传感器网络；分簇路由；能耗均衡；距离和角度；簇头概率；轮转周期

# An energy balanced clustering routing protocol for WSN

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**Abstract:**

Energy conservation is one of the research hotspots in WSN, while routing protocols have direct impact on energy consumption.. On the basis of analyzing the existing clustering multi-hop routing protocols, a cluster-based routing protocol (EBCRP) that consider multiple factors to balance energy consumption is proposed. In EBCRP, relay cluster heads are selected by considering the distance and direction to itself, experience factor is multiplied to make that the probability being a cluster head changes with the distance from the node to the Sink by negative exponential function; relay cluster heads wait for a certain time to facilitate data fusion, which is inversely proportional to the distance from the Sink to itself; in addition, the rotation cycle is discussed by simulation, and an optimal cycle is determined. The simulation results show that EBCRP can enable the first network node death postponed ,more balanced energy consumption, longer lifetime.

**Keywords:** Wireless Sensor Networks, clustering routing, energy balancing, distance and direction, probability of being cluster head, rotation cycle

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