

## 低开销低延迟WSN多费马点链多地域群播算法

作者：苏畅, 臧李立, 尚凤军, 赵曜

单位：重庆邮电大学计算机学院

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摘要：

多地域群播是源节点将数据传输到WSN中多个地理位置区域内的所有节点。现有无线传感器网络多地域群播算法没有做到能量消耗和延迟的平衡，单费马点链算法虽然降低了能量的消耗，传输的平均延迟却很大。文中提出一种低能耗低延迟多地域群播算法LLA (Low-cost and Low-latency multi-fermat chain multi-geocast Algorithm)，在保持较低能量消耗的基础上，大大降低了传输延迟。文中首先提出网格划分算法，然后提出三角形费马点和四边形费马点相结合的方法建立费马点链，提高了建立费马点链的成功率。最后，对LLA算法和现有的算法的性能进行了系统的理论和实验分析。仿真结果表明：LLA算法在能量消耗、平均延迟方面优于现有算法。

关键词：无线传感器网络；地域群播；费马点链；NS2；低延迟；低开销

## Low-cost and Low-latency multi-Fermat chain multi-geocast Algorithm in Wireless Sensor Networks

**Author's Name:**

**Institution:**

**Abstract:**

Multi-Geocast is source node transmits message to all the nodes of multiple regions in wireless sensor networks. The existing Multi-Geocast algorithms in WSN can not do the balance of energy consumption and latency. Though Single Fermat-chain algorithms can reduce energy consumption, but the average transmission delay is great. This paper proposed a Low-cost and Low-latency multi-Fermat chain multi-Geocast Algorithm (LLA), which greatly reduced transmission delay while maintaining low energy consumption. This paper first proposed mesh and cluster head selection algorithm, and then establish Fermat chain combining triangle and quadrilateral Fermat Point to improve the success establishment rate of Fermat chain. Finally, we simulated the LLA algorithm and existing algorithm. The results show that LLA is better than existing algorithms in energy consumption and average latency.

**Keywords:** WSN; Geocasting; Fermat-chain; NS2; Low-latency; Low-cost

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