



## AN ADAPTIVE CHANNEL HOPPING ALGORITHM FOR WIRELESS SENSOR NETWORK WITH MESH STRUCTURE

Zhao Jindong, Fan Baode, Lu Yunhong, Mu Chunxiao

School of Computer Science and Technology

Yantai University, Yantai 264005

Shandong, China

Emails: [zhjdong@126.com](mailto:zhjdong@126.com)

---

*Submitted: Mar. 31, 2013*

*Accepted: July 12, 2013*

*Published: Sep. 05, 2013*

---

*Abstract- According to EGTS proposal, an adaptive channel hopping algorithm that can be used in wireless mesh sensor networks was is designed in this paper. The nodes select proper channels independently and use them to communicate with their neighbors. Once a pair of nodes find their current channel has been deteriorated, they abandoned the current channel and enable the reserved channel, so that the reliability of the network is improved. The algorithm is compatible with the primitives and the frame structure of EGTS and makes use of multi-channels efficiently. The data structure and the procedure of the mechanism were described in detail and the feasibility and the efficiency was given by analysis and experiment. Finally, it is concluded that the algorithm is practicable when the density of network is less than 8 and the topology is relatively static.*

**Index terms:** Wireless Sensor Network; multi-channel communication; Adaptive Channel Hopping; IEEE802.15.4; Wireless Mesh Net