# An Energy-Efficient Compression Algorithm for Spatial Data in Wireless Sensor Networks

Beihua Ying*

** School of Information Science and Engineering, Ningbo Institute of Technology, Zhejiang University, Ningbo, Zhejiang, 315100, China*

**yingbh@nit.zju.edu.cn**

***Abstract*—Energy efficiency is one of the most important design metrics for wireless sensor networks. As sensor data always have redundancies, compression is introduced for energy savings. In this paper, a lightweight compression algorithm for data with spatial correlation is proposed, which can be implemented on resource constrained nodes to reduce the total energy costs in the whole networks. By adopting pipelining and introducing partial computation, our method achieves a little inter-sensor communication expenditure, and it can reduce energy costs while still keep a good distortion. The simulation results show that, compared with the wavelet compression scheme, the algorithm obtains more energy savings under the same distortion rate.**

***Keyword*—Data Compression, Spatial Correlation, Energy Efficient, Wireless Sensor Networks, Wireless Communication**

**Beihua Ying** received her Ph.D. degree from Tsinghua University, Beijing, China, in 2010 and the BS degree from Xidian University, Xi'an, China, in 2004, both in Electronic Engineering. She is currently a lecturer with the school of Information Science and Engineering, Ningbo Institute of Technology, Zhejiang University. Her research interests include design and analysis of energy-efficient data process for wireless sensor networks, data gathering and routing protocol in wireless ad hoc and sensor networks, and optimization problems.