Hybrid Hierarchical Routing Protocol for WSN Lifetime Maximization

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Abstract : Conceiving and developing routing protocols for wireless sensor networks requires considerations on constraints such as network lifetime and energy consumption. In this paper, we propose a hybrid hierarchical routing protocol named HHRP combining both clustering mechanism and multipath optimization taking into account residual energy and RSSI measures. HHRP consists of classifying dynamically nodes into clusters where coordinators nodes with extra privileges are able to manipulate messages, aggregate data and ensure transmission between nodes according to TDMA and CDMA schedules. The reconfiguration of the network is carried out dynamically based on a threshold value which is associated with the number of nodes belonging to the smallest cluster. To show the effectiveness of the proposed approach HHRP, a comparative study with LEACH protocol is illustrated in simulations.