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Vinu Sundararaj , Selvi Muthukumar , R.S. Kumar

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An Optimal Cluster Formation Based Energy Efficient Dynamic Scheduling Hybrid MAC Protocol for Heavy Traffic Load in Wireless Sensor Networks

¹Vinu Sundararaj, ²Selvi Muthukumar, *³R.S. Kumar

¹Department of Electronics and communication,

Anna University, Tamilnadu, India.

²Research Scholar,

Manonmaniam Sundaranar University,

Tirunelveli, Tamil Nadu, India.

³Research Scholar

Osmania University

*satheeskumarr0681@gmail.com

Abstract: This article proposes an Energy Efficient Dynamic Scheduling Hybrid MAC Protocol (*EDS-MAC*) for Traffic Adaptive Wireless Sensor Networks. The proposed approach consists of two stages. (i) cluster formation, and (ii) data transmission. In the first stage, a variable step size firefly algorithm (VSSFFA) is proposed for generating energy-aware clusters by optimal selection of cluster heads. The VSSFFA reduces the cost of locating optimal position for the head nodes in a cluster. Additionally, we proposed the VSSFFA-based approach within the cluster rather than base station, which makes it a semi-distributed method. The selection criteria of the objective function are based on the residual energy, intra-cluster distance, node degree and head count of the probable cluster heads. Data communication is done using data transmission stage, which reduces the latency, delay, and

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