



Harvested Energy under Beam Selection for in Vivo WNSN under Interference

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Abstract:

Autonomous wireless nanosensor (AWNS) nodes with communication capabilities are envisioned to increase the potential application of individual nanosensors. But energy storage capacity of nanosensors is the key issue of Wireless Nano Sensor Networks (WNSNs). On the other hand, as sensing range of individual nanosensors node is limited. Therefore, very high node density is essential, which leads to an interference limited scenario. However, multiuser MIMO with random unitary beamforming (RUB)-based cooperative beam selection is one of the most suitable techniques used to enhance the energy harvesting (EH) performance. This research presents various statistical measures, by virtue of harvested energy, of multiuser MIMO system under interference limited scenario using RUB based beam selection scheme. Specifically, we have derived analytical expression for Cumulative Distribution Function (CDF) and outage (Pout) of the system under consideration by virtue of harvested energy, in which RUB based beam selection is used for harvesting. Further, the effect of number of antennas (M), density of interferers (I) and aggregate power of interferers (II) on Pout of harvested energy is presented. For the system under consideration, Probability Density Function (PDF) of harvested energy, amount of harvested energy, throughput and different parameter of secrecy analysis among the others can be analyzed in future.

Biography:

Dr. S Pratap Singh is fellow of IETE, and member of IEEE and GISFI. He has published two Indian IPR. Published fifteen research papers, as first author, in reputed journals of IEEE, Elsevier, Springer, Willey and



Taylor & Francis. Also, published thirty seven Scopus indexed research papers through different international conferences of IEEE, Elsevier and Springer. Fetched grants from AKTU, India in the field of Nano Communication. Designed and taught a course on “AI Enabled Molecular Communication System-I” which is a fusion of Molecular Communication system and Deep Learning. His research interest is in the field of Nano communication.

Publication of speakers:

1. Singh, Rajneesh & Singh, S Pratap & Tiwari, Shailesh. (2020). Performance evaluation of Wireless Nanosensor Networks under interference. Nano Communication Networks. 25. 100311. 10.1016/j.nancom.2020.100311.
2. Singh, S Pratap & Kumar, Amit & Mishra, Saket & Kumar, Sanjay. (2020). Closed Form Expressions for Average Capacity and Symbol Error Rates Under Different Diversity Techniques Over EGK Fading Under Interference. Wireless Personal Communications. 10.1007/s11277-020-07337-8.

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