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Main aim of relaying is to improve coverage and performance of the wireless networks, and has impacts on the amount of traffic carried over the link, interference, power consumption, etc.

Throughput (b/s/m²) vs. Network Area (m²)

- Alamouti 2x1 PHY Simulator
- SISO PHY Simulator
- AODV
- DSTBC
- D&F

Aggregate network throughput for AWGN (LOS) Channel Model is shown above. Performance of the dynamic routing protocol suffers when SNR is low.

On the other hand, if the propagation environment is NLOS, relaying provides better throughput results compared to routing for low SNR values.

Conclusions

- Using relays at low densities can improve the overall network throughput significantly depending on network scenario and propagation environment.
- The use of ST cooperation in free space (no multi-path) propagation environments degrades the N-SAP throughput, due to the poor BER performance of space time block codes in LOS propagation environment.
- In NLOS propagation scenarios, use of relays can improve the network throughput for both cooperative and non-cooperative scenarios (the improvement is more significant for cooperative scenarios).
- The overall throughput of the network decreases with the increasing number of randomly placed relaying nodes for non-cooperative scenarios, reflecting the increased interference caused by the extra relaying nodes deployed in the network.
- Assigning and managing relays for wireless networks using dynamic routing protocols remains as a big challenge that needs to be tackled.