

## Decode and Forward Cooperative Protocol Enhancement Using Interference Cancellation

**Authors :** Siddeeq Y. Ameen, Mohammed K. Yousif

**Abstract :** Cooperative communication systems are considered to be a promising technology to improve the system capacity, reliability and performances over fading wireless channels. Cooperative relaying system with a single antenna will be able to reach the advantages of multiple antenna communication systems. It is ideally suitable for the distributed communication systems; the relays can cooperate and form virtual MIMO systems. Thus the paper will aim to investigate the possible enhancement of cooperated system using decode and forward protocol. On decode and forward an attempt to cancel or at least reduce the interference instead of increasing the SNR values is achieved. The latter can be achieved via the use group of relays depending on the channel status from source to relay and relay to destination respectively. In the proposed system, the transmission time has been divided into two phases to be used by decode and forward protocol. The first phase has been allocated for the source to transmit its data whereas the relays and destination nodes are in receiving mode. On the other hand, the second phase is allocated for the first and second groups of relay nodes to relay the data to the destination node. Simulations results have shown an improvement in performance is achieved compared to the conventional decode and forward in terms of BER and transmission rate.

**Keywords :** cooperative systems, decode and forward, interference cancellation, virtual MIMO

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