

## Node Pair Selection Scheme in Relay-Aided Communication Based on Stable Marriage Problem

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**Abstract :** This paper describes a node pair selection scheme in relay-aided multiple source multiple destination communication system based on stable marriage problem. A general case is assumed in which all of source, relay and destination nodes are equipped with multiantenna and carry out multistream transmission. Based on several metrics introduced from inter-node channel condition, the preference order is determined about all source-relay and relay-destination relations, and then the node pairs are determined using Gale-Shapley algorithm. The computer simulations show that the effectiveness of node pair selection is larger in multihop communication. Some additional aspects which are different from relay-less case are also investigated.

**Keywords :** relay, multiple input multiple output (MIMO), multiuser, amplify and forward, stable marriage problem, Gale-Shapley algorithm

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