

Multiple Antenna Selection of multi-Relay System using GSC Scheme

Ahmed El-Mahdy, Seif El-Wakil, and Ahmed Elbakly

German University in Cairo and Arab Academy for Science, Technology & Maritime transport

Abstract—

Due to the emergence of very high-data-rate wireless communications, the adaptation of traditional diversity systems is required so that some performance is sacrificed for complexity reduction. With this goal in mind, we investigate the performance of multi-antenna multi-relay system when the generalized selection combining (GSC) is used to select and combine a number of diversity branches. The performance is measured in terms of bit error rate (BER) and is evaluated for both amplify and forward and decode and forward protocols. The considered channel is a slow flat fading channel. The performance is evaluated for known and estimated channel. The channel is estimated using least square algorithm. The performance of channel estimation

algorithm **IJSER** is measured in terms of mean square error of estimation. The result shows that a reduction in complexity and power consumption is achieved for the multi-relay when GSC is used at the expense of some performance degradation.

Keywords: multi-antenna relays, wireless communications, diversity combining, and fading channel.