

## **Comparator Network aided Multiple Antenna Receivers**

### **Abstract**

The considered low-resolution MIMO receiver implies that the received signals simultaneously are processed by the 1-bit ADCs and the comparator network, where the latter is composed of several simple comparators with binary outputs. In this study, we propose a low-resolution aware linear minimum mean-squared error (LRA-LMMSE) channel estimator for such low-resolution MIMO receivers. By employing the proposed channel estimator and its corresponding estimation error, we build up a lower bound on the ergodic sum rate for the low-resolution aware linear MMSE receiver. Simulation results on the channel estimation match the analytical MSE calculations and it is shown that by taking into account the additional comparator network, the proposed system outperforms the conventional 1-bit MIMO system. Moreover, numerical simulations confirm an advantage in terms of sum rate for the proposed system.