

## Practical Interference-Aware R-ML SIC Receiver for LTE SU-MIMO Spatial Multiplexing

Abstract: In the last years, the receiver design has become crucial for the performance of MIMO systems. However, the high complexity of the optimum Maximum-Likelihood (ML) receivers raises the problem of complexity-performance trade-off. This TD presents a practical Reduced Complexity ML Interference-Aware Receiver with Successive Interference Canceling principle (R-ML IA SIC) for the single user MIMO system. Low computational complexity is achieved by decoupling real and imaginary parts of the interference-aware soft log-likelihood metrics. The proposed receiver does not introduce loss of information compared to ML receivers thanks to employed SIC principle, meaning that the complexity reduction comes without any performance penalty. In the flat-fading environment in moderate and high SNR regime our receiver achieves up to 1 bit/dim throughput gain compared to the R-ML IA receiver based on Parallel detection (R-ML IA PAD). The throughput during the link-level simulations of our receiver is close to the theoretically predicted one by the probability of outage analysis.

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