

# A Simplified Massive MIMO Implemented with Pre or Post-Processing

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*Abstract*—This paper considers the use of massive multiple input, multiple output (MIMO) combined with single-carrier with frequency-domain equalization (SC-FDE) modulations, associated to millimeter wave (mm-Wave) communications using precoding. For the sake of comparison, this paper performs a comparison of pre and post-processing methodology, using the same algorithms. In this paper, we consider three different types of algorithms: Zero Forcing Transmitter (ZFT), Maximum Ratio Transmitter (MRT), and Equal Gain Transmitter (EGT), both of

the latter two with iterative detection schemes. The advantage of both MRT and EGT relies on avoiding the computation of pseudo-inverse of matrices. The performance of MRT and EGT are very close to the matched filter bound just after a few iterations of a new proposed interference cancellation, even when the number of receiving antennas is not very high.

*Keywords*—Massive MIMO, precoding, SC-FDE, 5G, Interference Cancellation, mm-Wave.