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# BER Analysis of Precoders in Multi-User MIMO

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*Abstract* – **For Multi-Input Multi-Output (MIMO) transmission systems, we present a diagonal Precoder with a Minimum Bit Error Rate (MBER). This research builds on the findings with optimized the global transmission system (precoder and equalizer) using the Minimum Mean Square Error (MMSE) criterion, a new diagonal precoder that minimizes the BER is used to optimize the system. Our research is inspired by the notion that people are more likely to favor a solution that reduces the BER over the Mean Square Error from a practical standpoint. Monte Carlo simulations employing a Quadratic Amplitude Modulation are used to demonstrate the performance improvement (QAM).**

*Keyword* – **MBER, MIMO, MMSE, Precoder, QAM, etc.**