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Sum Capacity with Regularized Channel Inversion in Multi-Antenna Downlink Systems under Equal Power Constraint

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Abstract : Channel inversion is one of the simplest techniques for multiuser downlink systems with single-antenna users. In this paper regularized channel inversion under equal power constraint in the multiuser multiple input multiple output (MU-MIMO) broadcast channels has been considered. Sum capacity with plain channel inversion also known as Zero Forcing Beam Forming (ZFBF) and optimum sum capacity using Dirty Paper Coding (DPC) has also been investigated. Analysis and simulations show that regularization enhances the system performance and empower linear growth in Sum Capacity and specially work well at low signal to noise ratio (SNRs) regime.

Keywords : broadcast channel, channel inversion, multiple antenna multiple-user wireless, multiple-input multiple-output (MIMO), regularization, dirty paper coding (DPC), sum capacity
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