



The DoF Region of the Multiple-Antenna Time Correlated Interference Channel with Delayed CSIT

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We consider the time-correlated multiple-antenna interference channel where the transmitters have (i) delayed channel state information (CSI) obtained from a latency-prone feedback channel as well as (ii) imperfect current CSIT, obtained e.g. from prediction on the basis of these past channel samples. We derive the degrees of freedom (DoF) region for the two-user multiple-antenna interference channel under such conditions. The proposed DoF achieving scheme exploits a particular combination of the space-time alignment protocol designed for fully outdated CSIT feedback channels (initially developed for the broadcast channel by Maddah-Ali et al, later extended to the interference channel by Vaze et al. and Ghasemi et al.) together with the use of simple zero-forcing (ZF) precoders. The essential ingredient lies in the quantization and feedback of the residual interference left after the application of the initial imperfect ZF precoder. Our focus is on the MISO setting albeit extensions to certain MIMO cases are also considered.

Comments: 30 pages, 2 figures, with detailed proof of Theorem 2

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