IMPROVED MULTIUSER DIVERSITY USING SMART ANTENNAS WITH LIMITED FEEDBACK (ThuPmOR3)

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Abstract :

Multiuser diversity and beamforming are two techniques that promise dramatically increased system throughput and spectral efficiency. In most systems it has however been considered infeasible to utilize spatial channel information, due to the increased feedback load. In order to exploit the benefits of both multiuser diversity and beamforming, we show how to compute the second order channel statistics, conditioned on the norm of the current channel realization. The conditional channel statistics allow for elaborate scheduling and smart antenna techniques, with limited feedback. Herein, the downlink of a single cell multiple−input single−output (MISO) system is considered. Only the current signal to noise ratio (SNR) is fed back from the mobile stations, whereas the second order channel statistics can be estimated at the base station from information collected in the uplink. A simple scheduling/eigenbeamforming scheme is proposed and shown to outperform opportunistic beamforming, which is a technique with similar feedback.

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