

“Stability and Power Control in Limited Information Based MAC”

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Opportunistic scheduling is a key mechanism for improving the performance of wireless systems. However, this mechanism requires that transmitters are aware of channel conditions (or CSI, Channel State Information) to the various possible receivers. CSI is not automatically available at the transmitters, rather it has to be acquired. Acquiring CSI consumes resources, and only the remaining resources can be used for actual data transmissions. We explore the resulting trade-off between acquiring CSI and exploiting channel diversity to the various receivers. Specifically, we propose strategies that achieve the fixed fraction of the stability region of the system. Also, we propose the stochastic approximation based power control strategy to maximize the system throughput.