



ADAPTIVE LAYERED SPACE-FREQUENCY EQUALIZATION FOR SINGLE-CARRIER MIMO SYSTEMS (WedAmOR2)

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★ Abstract :

We propose an adaptive layered space-frequency equalization (ALSFE) structure to deal with the multiple-input multiple-output (MIMO) time-varying frequency selective channels, where at each stage of detection, a group of selected data streams are detected and are then cancelled from the received signals. Two types of adaptive channel estimation approaches are employed for ALSFE, assuming respectively uncorrelated and correlated frequency bins. Noise power estimation is also exploited, which is based on the maximum likelihood (ML) criterion. It is shown that our proposed multistage ALSFE significantly outperforms the previous RLS based single-stage adaptive FDE without channel estimation, at comparable complexity. In particular, ALSFE based on the least-mean-square structured channel estimation (LMS-SCE) approaches the performance of LSFE with perfect channel state information (CSI) and has a fast convergence speed.