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## Robust Matrix Completion

Abstract: We consider the problem of recovery of a low-rank matrix in the situation when most of its entries are not observed and a fraction of observed entries are corrupted. The observations are noisy realizations of the sum of a low rank matrix, which we wish to recover, with a second matrix having a complementary sparse structure such as element-wise or column-wise sparsity. We analyse a class of estimators obtained by solving a constrained convex optimization problem that combines the nuclear norm and a convex relaxation for a sparse constraint. Our results are obtained for the simultaneous presence of random and deterministic patterns in the sampling scheme. We provide guarantees for recovery of low-rank and sparse components from partial and corrupted observations in the presence of noise and show that the obtained rates of convergence are minimax optimal.

This is a joint work with K. Lounici and A. Tsybakov.

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