1147-49-310 **Simon Foucart**, **Deanna Needell**, **Reese Pathak**, **Yaniv Plan** and **Mary Wootters***, marykw@stanford.edu. *Weighted recovery of low-rank matrices from fixed sampling patterns.* Preliminary report.

We study the matrix completion problem when the observation pattern is deterministic and possibly non-uniform. We propose a simple and efficient debiased projection scheme for recovery from noisy observations and analyze the error under a suitable weighted metric. We introduce a simple function of the weight matrix and the sampling pattern that governs the accuracy of the recovered matrix. We derive theoretical guarantees that upper bound the recovery error and nearly matching lower bounds that showcase optimality in several regimes. Our numerical experiments demonstrate the computational efficiency and accuracy of our approach. (Received January 17, 2019)

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