例：ISTA × 深層展開

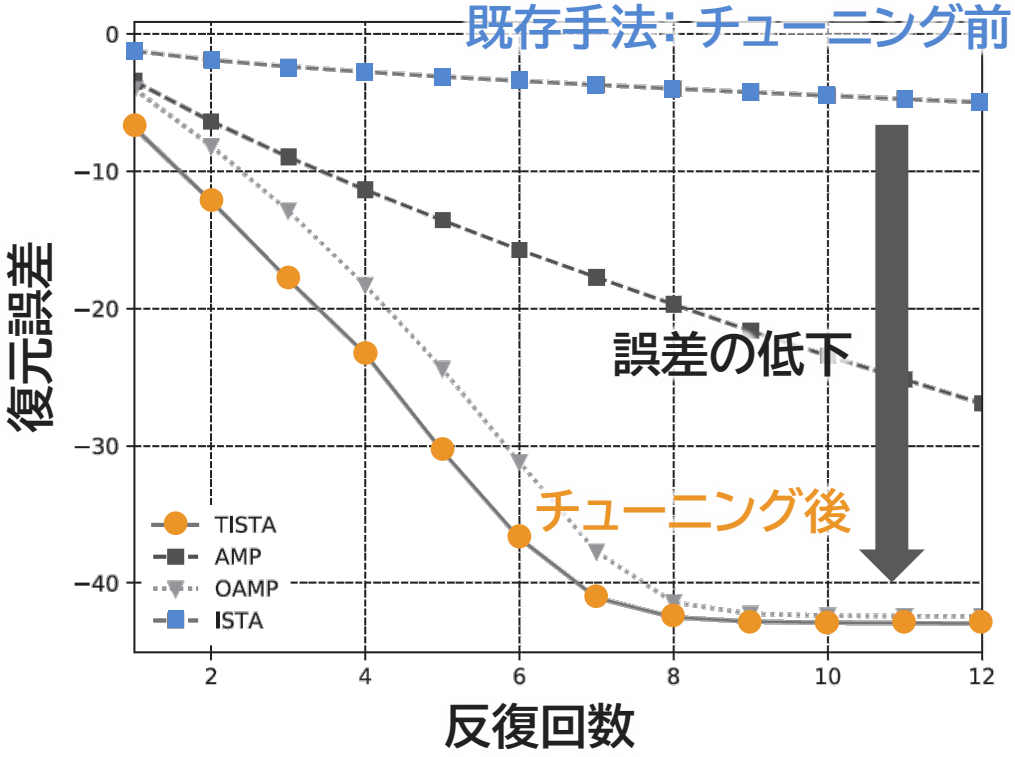
スパース信号 x を観測信号 $Ax + w$ から復元

$$\boldsymbol{r}_t = \boldsymbol{s}_t + \gamma_t \boldsymbol{W}(\boldsymbol{y} - \boldsymbol{A}\boldsymbol{s}_t),$$

$$\boldsymbol{s}_{t+1} = \eta_{MMSE}(\boldsymbol{r}_t; \tau_t^2),$$

$$v_t^2 = \max\left\{ \frac{\|\boldsymbol{y} - \boldsymbol{A}\boldsymbol{s}_t\|_2^2 - M\sigma^2}{\mathrm{trace}(\boldsymbol{A}^T\boldsymbol{A})}, \epsilon \right\}$$

$$\tau_t^2 = \frac{v_t^2}{N}(N + (\gamma_t^2 - 2\gamma_t)M) + \frac{\gamma_t^2\sigma^2}{N}\mathrm{trace}(\boldsymbol{W}\boldsymbol{W}^T),$$



Ito, Takabe and Wadayama, "*Trainable ISTA for Sparse Signal Recovery*," *IEEE Transactions on Signal Processing*, 2019