# TOTAL ERROR

**EXACT** $\Pi^T = [\alpha_1 \mathbf{s}_1^T \quad \alpha_2 \mathbf{s}_2^T \quad \alpha_3 \mathbf{s}_3^T]$

**A/D APPROX** $\hat{\Pi}^T = [\hat{\alpha}_1 \mathbf{s}_1^T \quad \hat{\alpha}_2 \mathbf{s}_2^T \quad \hat{\alpha}_3 \mathbf{s}_3^T]$

**FOR 3 CLUSTERS**

- $\left\| \Pi^T - \hat{\Pi}^T \right\|_1 \cdot \dfrac{\varepsilon^2}{1 - \rho(\mathbf{P})} + 3\varepsilon$

**FOR k CLUSTERS**

- $\left\| \Pi^T - \hat{\Pi}^T \right\|_1 \cdot \dfrac{\varepsilon^2}{1 - \rho(\mathbf{P})} + k\varepsilon$

$$\leq \frac{2^2 \max n_i}{1 - \rho(\mathbf{P})} + k^2 \max n_i$$

**THIS IS A COMPUTABLE ESTIMATE**

- All quantities in this estimate are directly available from **P**