

Statistical Approach

Most calculations can be summarized by

- Choose a norm: $\|\mathbf{A}\|_E = \left(\text{E tr}(\mathbf{A}^T \mathbf{A})\right)^{1/2}$ or ...
- Use the eigenvalue/eigenvector decomposition of $\widehat{\mathbf{P}}^f$:

$$\widehat{\mathbf{P}}^f = \mathbf{\Gamma} \widehat{\mathbf{\Lambda}} \mathbf{\Gamma}^T$$

$\mathbf{\Gamma}$ contains the eigenvectors

$$\widehat{\mathbf{\Lambda}} = (\hat{\lambda}_{ij})$$

- Simplify the norm to an expression containing $\{\lambda_i\}$, n :

$$\|\widehat{\mathbf{P}}^f\|_E^2 = \text{E tr}(\widehat{\mathbf{P}}^{fT} \widehat{\mathbf{P}}^f) = \text{E tr}(\mathbf{\Gamma}^T \widehat{\mathbf{P}}^f \mathbf{\Gamma} \mathbf{\Gamma}^T \widehat{\mathbf{P}}^f \mathbf{\Gamma}) = \text{E tr}(\widehat{\mathbf{\Lambda}} \widehat{\mathbf{\Lambda}}) = \dots$$