\[ c = F \times \quad M = \begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix} \]

\[ M_c = \tilde{M} F \times \]

\[ d = G \times m \]

\[ G = U \land V^T \quad \tilde{\nu} = \begin{pmatrix} \frac{n}{n} \\ 0 \end{pmatrix} \quad \tilde{\nu} = \begin{pmatrix} \tilde{V}_p, \tilde{V}_q \end{pmatrix} \quad \tilde{U} = \begin{pmatrix} \tilde{u}_p, \tilde{u}_q \end{pmatrix} \]

\[ m = \mathcal{U} \tilde{V}_p \tilde{V}_p^{-1} \tilde{V}_p^T d + \tilde{V}_q n \quad n = \text{any vector} \]

\[ d_{\text{est}} = G \tilde{P}^{-1} d + G \tilde{V}_q n \]

\[ C = \tilde{F} \tilde{P}^{-1} d + \tilde{F} \tilde{V}_q n \]

Suppose \( \text{cov}_n \) known. Then

\[ \text{cov}_C = \tilde{F} \tilde{V}_q \text{cov}_n \tilde{V}_q^T \tilde{F}^T \]

we can try to choose \( \text{cov}_n \) to be uncorrelated,

\[ \text{cov}_n = \begin{pmatrix} \tilde{n} \times I \end{pmatrix} \]

with \( \tilde{n} \) chosen so that \( \tilde{m}_n = \tilde{V}_q \tilde{n} \) has

variance \( \tilde{n} \times \) that agrees with our prior notion of how \( a \)'s vary. Thus we use

\[ \text{cov}_m_n = \tilde{V}_q \text{cov}_n \tilde{V}_q^T \]