

Reduction of Variables in PEM

Consider a space of functions

$$\varphi|_{\omega}(\mathbf{x}) = c_{\omega} + \mathbf{g}_{\omega} \cdot \mathbf{x} + \mathbf{x} \cdot \mathbf{H}_{\omega} \mathbf{x} \quad (1)$$

which minimizes some functional \mathcal{F} . Suppose there exists some representation of $\varphi|_{\omega}(\mathbf{x})$ such that

$$\varphi|_{\omega}(\mathbf{x}) = \begin{bmatrix} 1 & \mathbf{x} & \mathbf{x} \otimes \mathbf{x} \end{bmatrix} \begin{Bmatrix} c_{\omega} \\ \mathbf{g}_{\omega} \\ \mathbf{H}_{\omega} \end{Bmatrix} = \quad (2)$$