INVERSE PROBLEMS

- Does the inverse of K exist?
- What about $\begin{bmatrix} \mathbf{K}_+ \\ \mathbf{K}_- \end{bmatrix}^+$?

$$\underbrace{\begin{bmatrix} \mathbf{f}_+ \\ \mathbf{f}_- \end{bmatrix}}_{2n\times 1} = \underbrace{\begin{bmatrix} \mathbf{K}_+ \\ \mathbf{K}_- \end{bmatrix}}_{2n\times n} \underbrace{\boldsymbol{\rho}}_{n\times 1}$$

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$$\hat{\boldsymbol{\rho}} = \left([\mathbf{K}_+^T \quad \mathbf{K}_-^T] \begin{bmatrix} \mathbf{K}_+ \\ \mathbf{K}_- \end{bmatrix} \right)^{-1} [\mathbf{K}_+^T \quad \mathbf{K}_-^T] \begin{bmatrix} \mathbf{f}_+ \\ \mathbf{f}_- \end{bmatrix}$$

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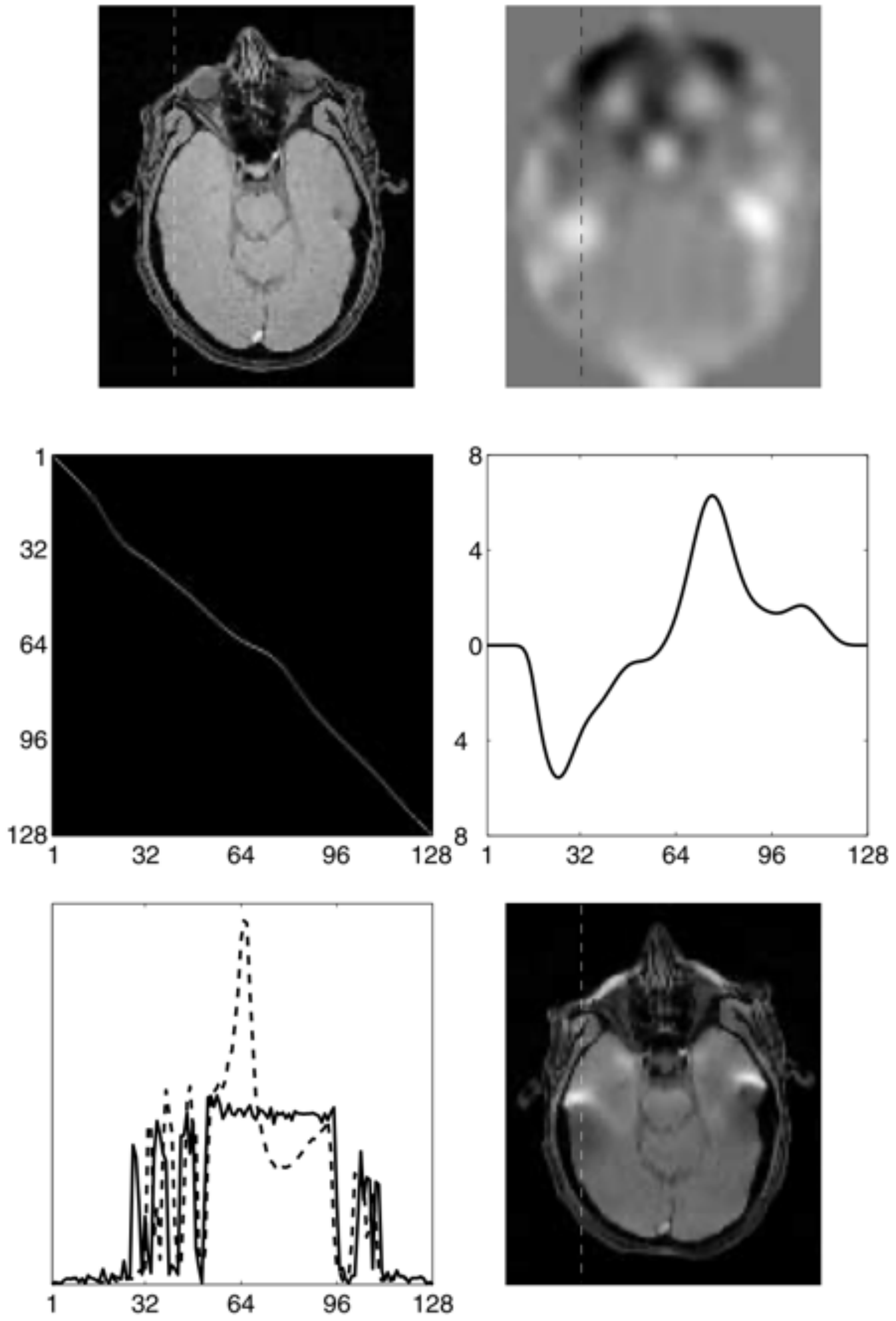


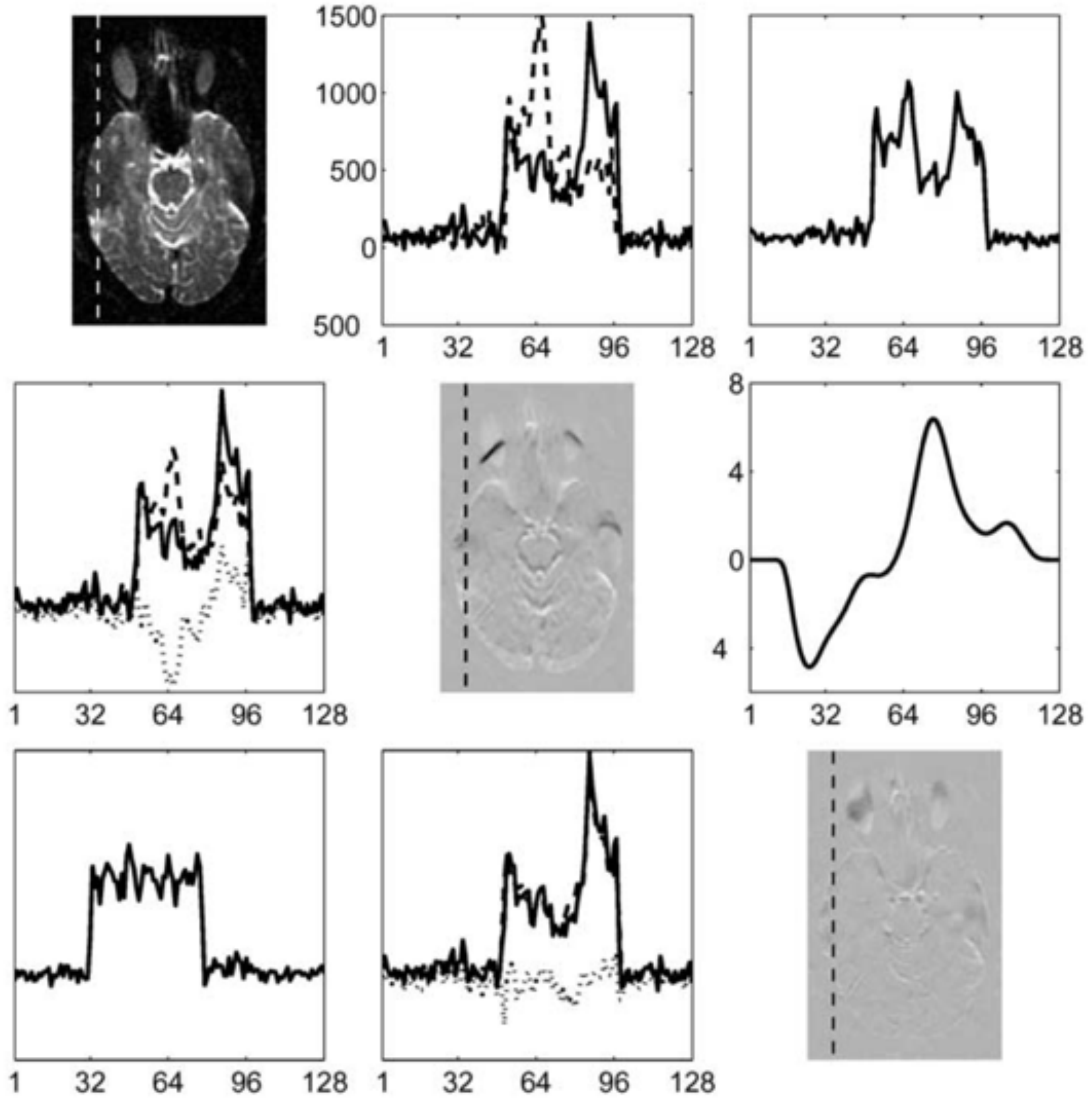
INVERSE FOR SURE

$$\underbrace{\begin{bmatrix} \widehat{\mathbf{e}}_{+} \\ \widehat{\mathbf{e}}_{+} \end{bmatrix}}_{2n\times 1} = \underbrace{\mathbf{R}(\mathbf{b})}_{2n\times 2n} \underbrace{\begin{bmatrix} \mathbf{f}_{+} \\ \mathbf{f}_{-} \end{bmatrix}}_{2n\times 1}$$

$$\underbrace{\mathbf{R}(\mathbf{b})}_{2n\times 2n} = \underbrace{\mathbf{I}}_{2n\times 2n} - \underbrace{\begin{bmatrix} \mathbf{K}_{+}(\mathbf{b}) \\ \mathbf{K}_{-}(\mathbf{b}) \end{bmatrix}}_{2n\times 1}$$

$$\times \underbrace{\left([\mathbf{K}_{+}^{T}(\mathbf{b}) \quad \mathbf{K}_{-}^{T}(\mathbf{b})] \begin{bmatrix} \mathbf{K}_{+}(\mathbf{b}) \\ \mathbf{K}_{-}(\mathbf{b}) \end{bmatrix} \right)^{-1}}_{n\times n}$$

$$\times \underbrace{[\mathbf{K}_{+}^{T}(\mathbf{b}) \quad \mathbf{K}_{-}^{T}(\mathbf{b})]}_{n\times 2n},$$



$$\min_{\arg=\mathbf{b}} O(\mathbf{b}) = \left(\sum_{c=1}^{m} [\mathbf{f}_{c+}^{T} \quad \mathbf{f}_{c-}^{T}] \mathbf{R}_{c}(\mathbf{b}) \begin{bmatrix} \mathbf{f}_{c+} \\ \mathbf{f}_{c-} \end{bmatrix} \right)$$