

$$\mathcal{T}_k \circ \mathcal{S}_k = -\frac{1}{4}\mathcal{I} + (\mathcal{D}'_k)^2$$

$$\begin{pmatrix} (\frac{i\eta}{2} - \frac{1}{4})\mathcal{I} - i\eta\mathcal{D}'_k & \mathcal{D}'_k \\ \mathcal{D}'_k & -\mathcal{I} \end{pmatrix} \begin{pmatrix} \mu \\ \theta \end{pmatrix} = \begin{pmatrix} g \\ 0 \end{pmatrix}$$