a)

$$\mathbf{x}^+ = \mathcal{F}^{-1}(A(\mathbf{x}^+)e^{jP(\mathbf{x}^+)})$$

$$\mathbf{x} = \mathcal{F}^{-1}(A(\mathbf{x})e^{jP(\mathbf{x})})$$

$$\tilde{\mathbf{x}} = \mathcal{F}^{-1}(A(\tilde{\mathbf{x}})e^{jP(\tilde{\mathbf{x}})})$$

$$K = \lambda\,(1-\lambda)$$

$$A(\mathbf{x}^+) = \sqrt{\lambda^2 A(\mathbf{x})^2 + (1-\lambda)^2 A(\tilde{\mathbf{x}})^2 + 2K A(\mathbf{x}) A(\tilde{\mathbf{x}}) \cos(P(\mathbf{x}) - P(\tilde{\mathbf{x}}))}$$

$$P(\mathbf{x}^+) = \arctan\left[\frac{\lambda A(\mathbf{x})\sin(P(\mathbf{x})) + (1-\lambda)A(\tilde{\mathbf{x}})\sin(P(\tilde{\mathbf{x}}))}{\lambda A(\mathbf{x})\cos(P(\mathbf{x})) + (1-\lambda)A(\tilde{\mathbf{x}})\cos(P(\tilde{\mathbf{x}}))}\right]$$

b)

$$A(\mathbf{x}^+) = \lambda_A A(\mathbf{x}) + (1-\lambda_A) A(\tilde{\mathbf{x}})$$

$$P(\mathbf{x}^+) = \begin{cases} P(\mathbf{x}) - |\Delta\Theta| * (1-\lambda_P), & \text{if } \Delta\Theta > 0 \\ P(\mathbf{x}) + |\Delta\Theta| * (1-\lambda_P), & \text{otherwise} \end{cases}$$