Harmonic Estimator

$\omega_{hn}(k)$

$i_{out}(k)$

$$\hat{\vec{x}}(k\,|\,k) = \mathbf{A}_{hn}(k)\hat{\vec{x}}(k\,|\,k-1)$$

$$\hat{\vec{x}}(k+1\,|\,k) = \hat{\vec{x}}(k\,|\,k) + \mathbf{L}(k)\left[i_{out}(k) - \mathbf{C}\hat{\vec{x}}(k\,|\,k)\right]$$

$$\hat{x}_1(k) = \hat{I}_{hn}(k)\sin\left[\hat{\vartheta}_{hn}(k)\right]$$

$$\hat{x}_2(k) = \hat{I}_{hn}(k)\cos\left[\hat{\vartheta}_{hn}(k)\right]$$

$\mathbf{L}(k)$

$\hat{\vec{x}}(k\,|\,k)$

$\omega_{hn}(k)$

$$\mathbf{P}(k\,|\,k) = \mathbf{A}_{hn}(k)\mathbf{P}(k\,|\,k-1)\mathbf{A}_{hn}^{T}(k) + \mathbf{Q}$$

$$\mathbf{L}(k) = \mathbf{P}(k\,|\,k)\mathbf{C}^{T}\left[\mathbf{C}\mathbf{P}(k\,|\,k)\mathbf{C}^{T} + \mathbf{R}\right]^{-1}$$

$$\mathbf{P}(k+1\,|\,k) = \left[\mathbf{I} - \mathbf{L}(k)\mathbf{C}\right]\mathbf{P}(k\,|\,k)$$