Estimation of Interference Temperature

Swrangsar Basumatary

February 27, 2013

$$T_I(f_c, B) = \frac{P_I(f_c, B)}{kB}$$

$$\{w_t^{(k)}\}_{t=1}^{N}$$

$$Y_k(f) = \sum_{t=1}^{N} w_t^{(k)} x(t) e^{-j2\pi f t}, \qquad k = 0, 1, ...K-1 \tag{1}$$

$$p = 2NW \tag{2}$$

$$\hat{S}(f) = \frac{\sum_{k=0}^{K-1} \lambda_k(f)|Y_k(f)|^2}{\sum_{k=0}^{K-1} \lambda_k(f)} \tag{3}$$

$$\mathbf{A}(f) = \begin{bmatrix} w_1 Y_1^{(1)}(f) & w_1 Y_2^{(1)}(f) & \dots & w_1 Y_K^{(1)}(f) \\ w_2 Y_1^{(2)}(f) & w_2 Y_2^{(2)}(f) & \dots & w_2 Y_K^{(2)}(f) \\ \vdots & \vdots & & \vdots \\ w_M Y_1^{(M)}(f) & w_M Y_2^{(M)}(f) & \dots & w_M Y_K^{(M)}(f) \end{bmatrix} \tag{4}$$

reference to haykin [1]

$$\mathbf{A}(f) = \sum_{k=0}^{K-1} \sigma_k(f) \mathbf{u}_k(f) \mathbf{v}_k^{\dagger}(f) \tag{5}$$

References

[1] Simon Haykin. Cognitive radio: Brain-empowered wireless communications. *IEEE Journal on selected areas in communications*, 23(2), 2005.