

$$\left(x(t) = \frac{1}{2\pi} \int_{\mathbb{R}} \hat{x}(\omega) e^{j\omega t} d\omega = \frac{1}{2\pi} \sum_{k=0}^{K-1} x[k] e^{-j\frac{\pi}{K}(t-k)} \varphi_k(t) \right)$$