4.2.2.1. The four cases of linear phase FIR filters. Rules for frequency selection.

*M: e*ven, symmetric impulse response

$$\omega_k = \frac{2\pi k}{M},\ k = 0,1,\ldots,\frac{M}{2}-1$$

*M: o*dd, symmetric impulse response

$$\omega_k = \frac{2\pi k}{M},\ k = 0,1,\ldots,\frac{M-1}{2}$$

*M: e*ven, antisymmetric impulse response

$$\omega_k = \frac{2\pi k}{M},\ k = 1,2,\ldots,\frac{M}{2},\ \text{method A.}$$

$$\omega_k = \frac{2\pi\left(k+\frac{1}{2}\right)}{M},\ k = 0,1,\ldots,\frac{M}{2}-1,\ \text{method B.}$$

*M: o*dd, antisymmetric impulse response

$$\omega_k = \frac{2\pi k}{M},\ k = 1,2,\ldots,\frac{M-1}{2},\ \text{method A.}$$

$$\omega_k = \frac{2\pi\left(k+\frac{1}{2}\right)}{M},\ k = 0,1,\ldots,\frac{M-1}{2}\ \text{method B.}$$