

Concept Question 9-4: Why are the impulse responses of FIR filters almost always even or odd?

Because the phase of the frequency response of an even impulse response is 0 or 180° , which amounts to multiplication by ± 1 , and the phase of the frequency response of an odd impulse response is $\pm 90^\circ$, which amounts to multiplication by $\pm j$. Hence, the phase distortion induced by the filter is minimal.