# Moving Target Indicators

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# Single Delay Line Cancelers

$$
\begin{aligned}
h(t) &= \delta(t) - \delta(t - T) \\
H(\omega) &= 1 - e^{-j\omega T} \\
|H(\omega)|^2 &= H(\omega)H^*(\omega) \\
&= (1 - e^{-j\omega T})(1 - e^{j\omega T}) \\
&= 2(1 - cos\omega T) \\
&= 4(sin(\omega T/2))^2
\end{aligned}
$$

Source: Bassem R. Mahafza. *Radar Systems Analysis and Design Using MATLAB®*. Chapman & Hall/CRC, 2000.

# Double Delay Line Cancelers

$$h(t) = \delta(t) - 2\delta(t-T) + \delta(t-2T)$$

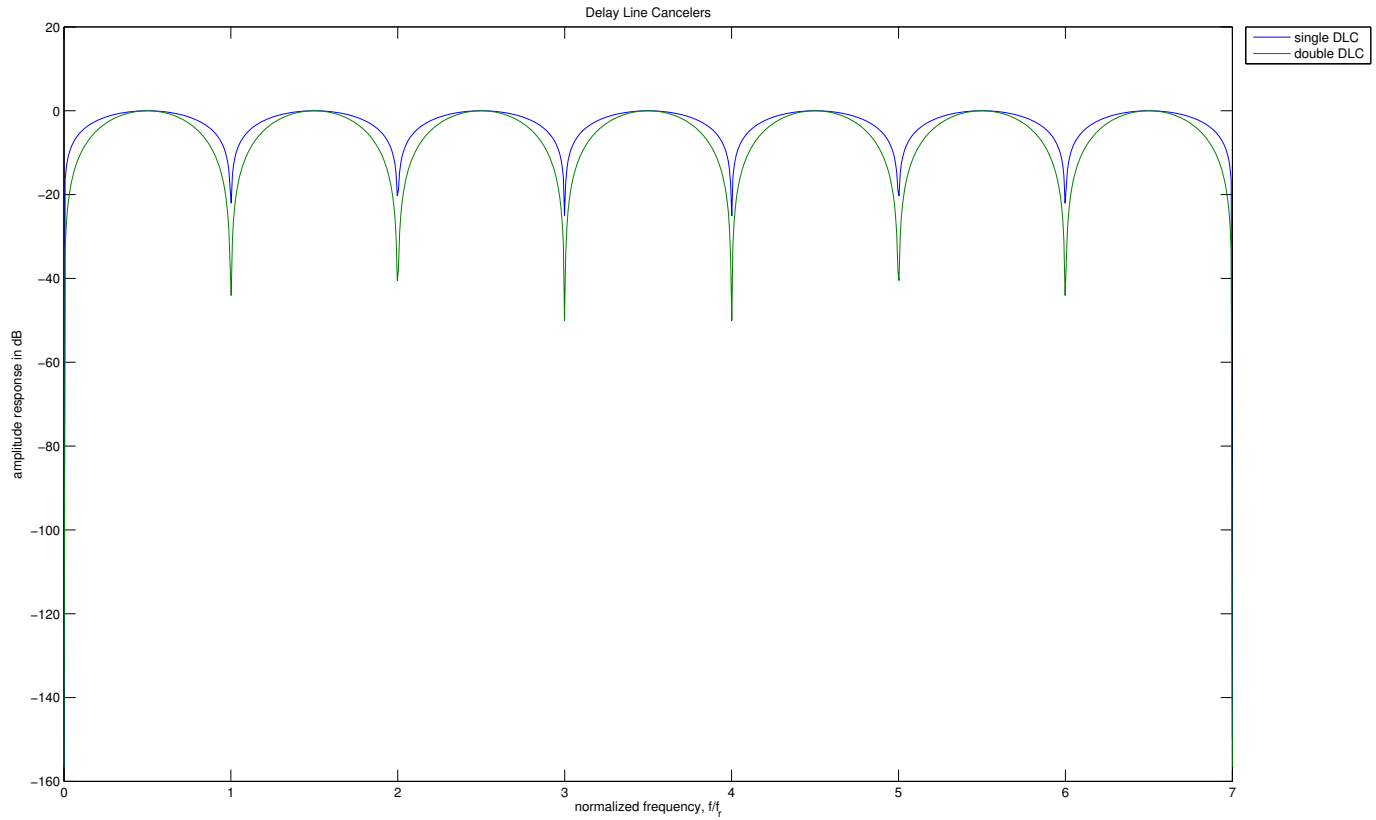
$$|H(\omega)|^2 = |H_1(\omega)|^2 |H_1(\omega)|^2$$

$$where\ |H_1(\omega)|^2 = 4(sin(\omega T/2))^2$$

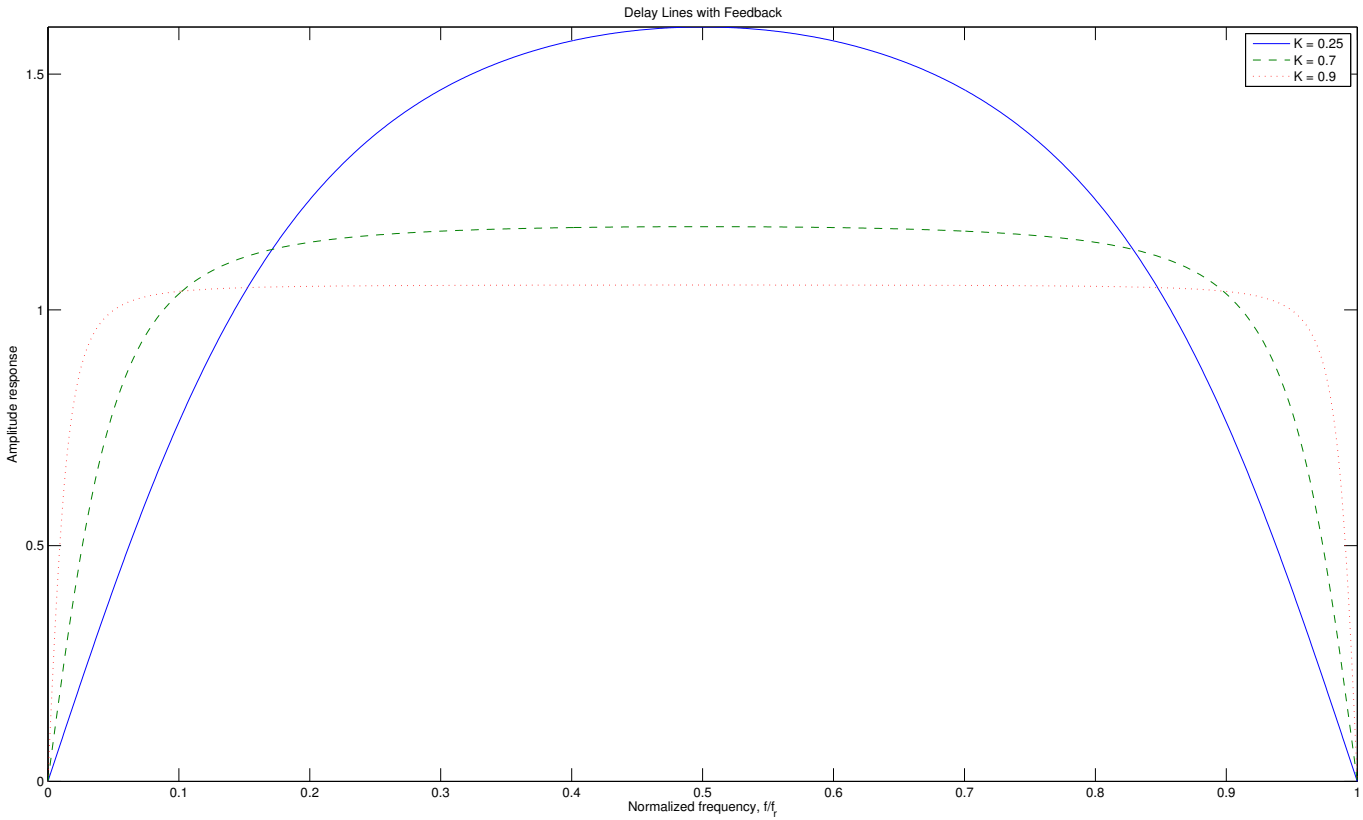
$$|H(\omega)|^2 = 16\left(sin\left(\omega\frac{T}{2}\right)\right)^4$$

Source: Bassem R. Mahafza. *Radar Systems Analysis and Design Using MATLAB®*. Chapman & Hall/CRC, 2000.

# Delay Line Cancelers



# Delay Lines with Feedback



# References


- Merrill I. Skolnik. *Introduction to Radar Systems*. McGraw-Hill, 2001.
- Bassem R. Mahafza. *Radar Systems Analysis and Design Using MATLAB®*. Chapman & Hall/CRC, 2000.

# Thanks