

$$\begin{aligned}
 H(z) &= \frac{1}{2} \left(1 + \frac{c+z^{-1}}{1+cz^{-1}} \right) \\
 &= \frac{1}{2} \left(\frac{1+cz^{-1}}{1+cz^{-1}} + \frac{c+z^{-1}}{1+cz^{-1}} \right) \\
 &= \frac{1}{2} \left(\frac{1+c + (1+c)z^{-1}}{1+cz^{-1}} \right) \\
 &= \frac{1+c}{2} \left(\frac{1+z^{-1}}{1+cz^{-1}} \right)
 \end{aligned}$$

Zero at $z = -1$
Pole at $z = -c$

