

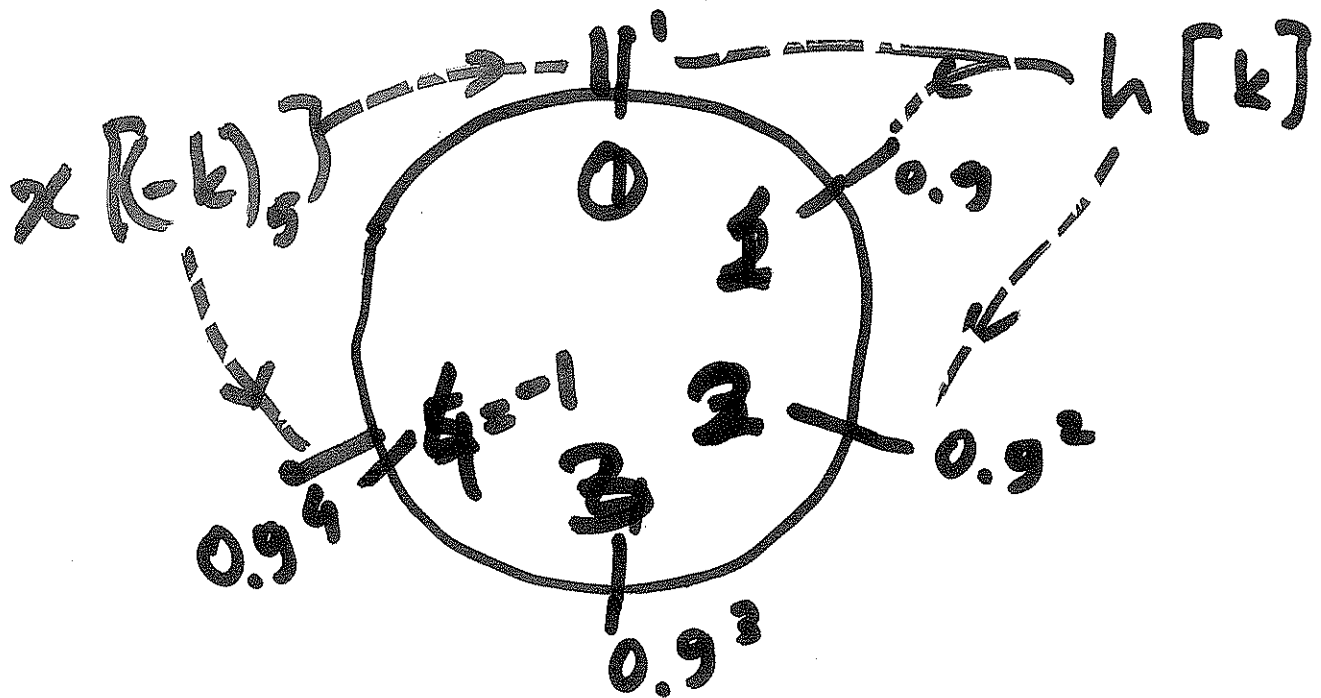
$$x[n] = \{1, 1\}$$

$$h[n] = \{1, 0.9, 0.9^2, 0.9^3, 0.9^4\}$$

$$n=0$$

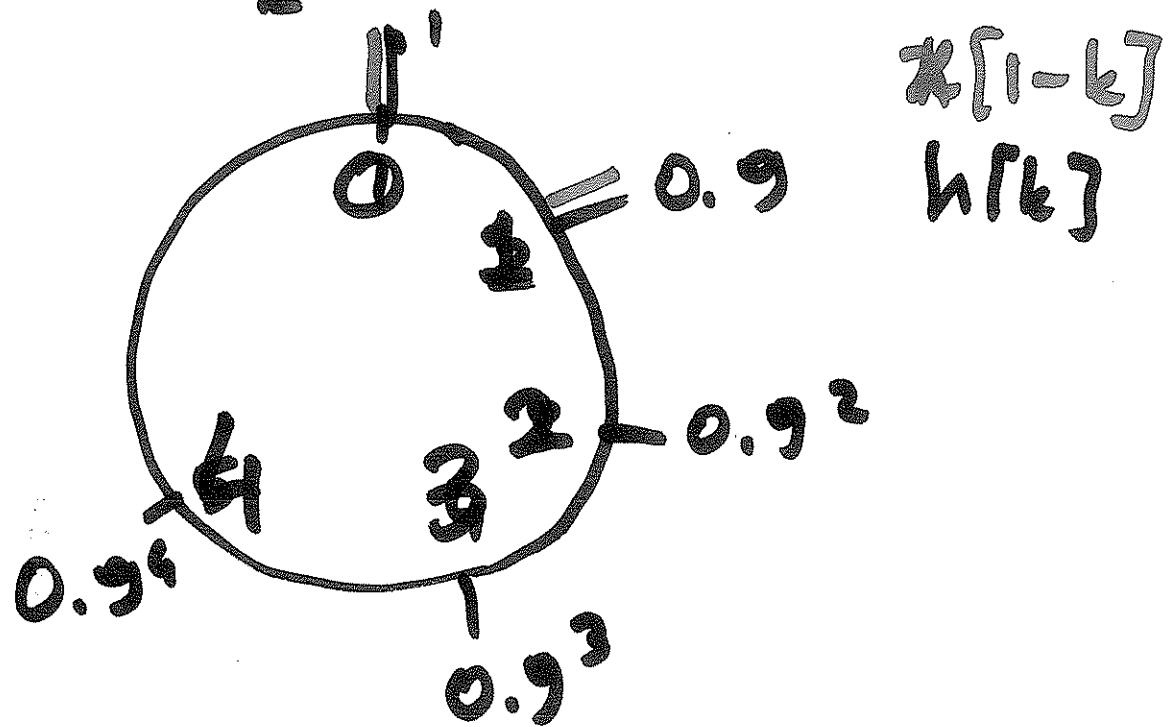
$$x_2[n] = x[n] \otimes h[n]$$

$$x_2[n] = \sum_{k=0}^4 h[k] x[(n-k)_5]$$



$$\begin{aligned} x_2[0] &= \sum_k h[k] x[-k]_5 \\ &= 1 \cdot 1 + 1 \cdot 0.9^4 \end{aligned}$$

$$x_2[n] = \sum_k h[k] x[(1-k)_5]$$



$$x_2[1] = 1 \cdot 1 + 1 \cdot 0.9 = 1 + 0.9 = y[1]$$

Circular convolution is periodic. The period of $x_2[k]$ is 5!