



<u>Problem 11</u> (round-off effects in digital filters)

Determine the variance of the round-off noise at the output of the two cascade realizations of the filter with system function

$$H(z) = H_1(z) \cdot H_2(z) \tag{1}$$

$$H_1(z) = \frac{1}{1 - 0, 5z^{-1}}, H_2(z) = \frac{1}{1 - 0, 25z^{-1}}$$
(2)





Figure 1: Two cascaded realizations of filters $H_1(z)$ and $H_2(z)$.

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