

Digital Communications and Laboratory

Fourth Homework

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Transmission system

In the following, two different scenarios are developed: a single-carrier transmission using Receiver (b) of homework 3 and an OFDM transmission with $M=512$ sub-channels. Both implementations are firstly simulated using coding to improve the error correction capability of the system; in particular, a *Low-density parity check* LDPC encoding is applied to the initial data stream in order to allow the receiver to detect codewords which do not belong to the code \mathcal{C} and eventually to correct them with the use of an LDPC decoder. These functions are provided by the Matlab toolbox. Finally, the same transmission is simulated without coding to appreciate the difference in P_{bit} for varying SNR.

Single Carrier Model

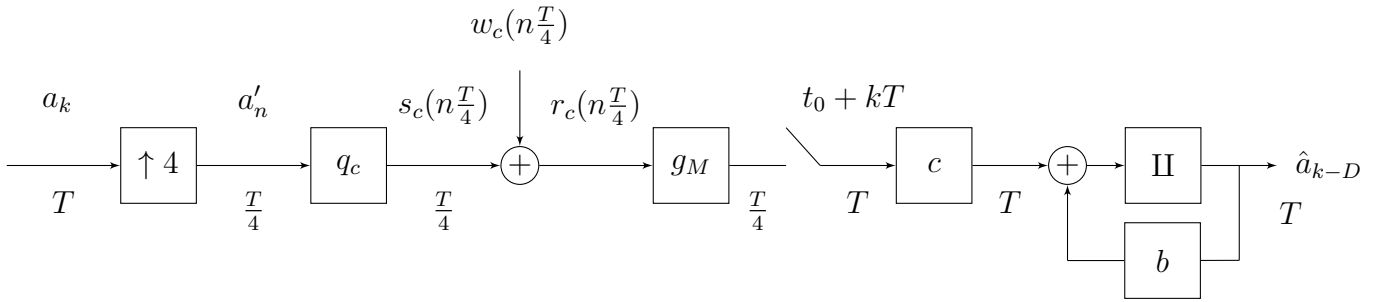


Figure 1. Model for the SC channel of Problem 1.

OFDM Model

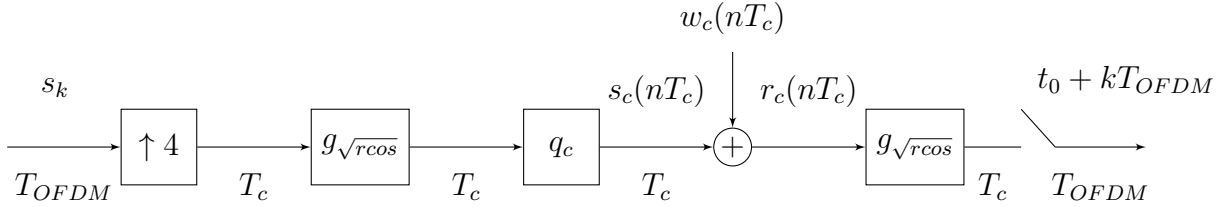


Figure 2. Model for the OFDM channel of Problem 1.

