

Simulations of Digital Communication Devices on Multicore Systems

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The purpose of this talk is to describe our experience in simulating digital communication systems in order to compare their performance when various methods for channel coding and modulation are implemented. Software simulations of digital communication systems are computationally intensive and run slow. They have to be performed for numerous values of signal-to-noise ratio, for various types of noise, and for very long input sequences. We have simulated communications through AWGN and Rayleigh noisy channels and compare the combination of integer coded modulation and OFDM with the combination of trellis coded modulation and OFDM.

Computer simulation of a digital communication device possesses natural parallelism. The work of the different blocks can be carried out by different CPUs. Some operations, (e.g., OFDM) are better performed by GPUs. We carried out the simulations on a multicore system as well as on a computational grid.

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