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A Connection between Rateless Coding and Multiple Stream Information Transmission

A construction of a rateless code family for communication over additive white Gaussian noise (AWGN) channels is presented. The proposed code structure is based on transmission of information in the form of multiple redundant data streams. The decoder separates the received multiple layers of data using parallel low complexity detection and then decodes each layer individually. The impact of the density of design rate points on code performance is examined. It is also demonstrated how the proposed codes can be applied for communication over multiple access and interference channels.