

This paper presents a general approach for optimizing the number of symbols in increments (packets of incremental redundancy) in a feedback communication system with a limited number of increments. This approach is based on a tight normal approximation on the rate for successful decoding. Applying this approach to a variety of feedback systems using nonbinary (NB) low-density parity-check (LDPC) codes shows that greater than 90% of capacity can be achieved with average blocklengths fewer than 500 transmitted bits. One result is that the performance with ten increments closely approaches the performance with an infinite number of increments. The paper focuses on binary-input additive-white Gaussian noise (BI-AWGN) channels but also demonstrates that the normal approximation works well on examples of fading channels as well as high-SNR AWGN channels that require larger QAM constellations. This paper explores both variable-length feedback codes with termination (VLFT) and the more practical variable length feedback (VLF) codes without termination that require no assumption of noiseless transmitter confirmation. For VLF, we consider both a two-phase scheme and CRC-based scheme.