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Divsalar , et al. **February 8, 2000**

Hybrid concatenated codes and iterative decoding

Abstract

Several improved turbo code apparatuses and methods. The invention encompasses several classes: (1) A data source is applied to two or more encoders with an interleaver between the source and each of the second and subsequent encoders. Each encoder outputs a code element which may be transmitted or stored. A parallel decoder provides the ability to decode the code elements to derive the original source information d without use of a received data signal corresponding to d. The output may be coupled to a multilevel trellis-coded modulator (TCM). (2) A data source d is applied to two or more encoders with an interleaver between the source and each of the second and subsequent encoders. Each of the encoders outputs a code element. In addition, the original data source d is output from the encoder. All of the output elements are coupled to a TCM. (3) At least two data sources are applied to two or more encoders with an interleaver between each source and each of the second and subsequent encoders. The output may be coupled to a TCM. (4) At least two data sources are applied to two or more encoders with at least two interleavers between each source and each of the second and subsequent encoders. (5) At least one data source is applied to one or more serially linked encoders through at least one interleaver. The output may be coupled to a TCM. The invention includes a novel way of terminating a turbo coder.

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