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BER performance of convolutionally coded BPSK layered hierarchical decode and forward relaying

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We consider a hierarchical wireless network in which two convolutionally coded BPSK sources transmit to a single relay which performs hierarchical decode and forward (HDF), decoding the exclusive OR (XOR) combination of the source data. The sources use the same convolutional code, so that the XOR combination of the coded data is a code sequence of this code, which decodes to the XOR combination of the uncoded data. We derive a tight upper bound on the BER of the decoded hierarchical data, as a function of the channel fade parameters for the source-relay channels.

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