

A simple taboo-based soft-decision decoding algorithm for expander codes

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Abstract:
We present a simple soft-decision decoding algorithm that modifies Sipser and Spielman's (see IEEE Trans, Inform. Theory, vol.42, p.1710-22, Nov. 1996) hard-decision sequential "bit-flipping" algorithm for decoding expander codes. The algorithm incorporates symbol reliability information and a simple "taboo" function that avoids repeated flipping of the same bit. The two algorithms have comparable simplicity, but simulations show that the soft-decision algorithm results in both improved performance and-because fewer decoding iterations are necessary-improved speed.

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