Errata for the paper: Good Error-Correcting Codes based on Very Sparse Matrices

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(a) In the statement of theorem 1 [2, page 403],

> a desired block error probability ϵ

should be replaced by

> any desired block error probability ϵ.

(b) In the proof of theorem 2 (page 406), the sentence

> For large t it is evident (c.f. Fig. 1) that $\left(\lambda H_2^e(w/L) + \frac{1}{M}\log q_{00}^{(wt)}\right)$ attains its largest value at $w = w^*$.

should read

> For large t it is evident (c.f. Fig. 1) that, if it is positive for any $w \leq w^*$, the term $\left(\lambda H_2^e(w/L) + \frac{1}{M}\log q_{00}^{(wt)}\right)$ attains its largest value at $w = w^*$.

(c) It should have been noted that theorems 3 and 4 (page 403) were originally proved by Gallager [1] using an ensemble of codes which is a subset of the ensemble used in [2] and has better distance properties.

(d) A factor of 2^{-M} was omitted from the argument of the logarithm in equation (43).

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References

1. R. G. Gallager. *Low Density Parity Check Codes.* Number 21 in Research monograph series. MIT Press, Cambridge, Mass., 1963.
2. D. J. C. MacKay. Good error correcting codes based on very sparse matrices. *IEEE Transactions on Information Theory*, 45(2):399–431, 1999.