

Errata

Page 27: second line in E.1.3.11.

from the message space \mathbb{F}^{n-1} by adding a parity check bit $c_{n-1} := -\sum_{i=0}^{n-2} c_i$.

Page 55: 1.6.5 Lemma.

Let χ be a nontrivial one-dimensional character

Page 56: third line.

$$\chi(h) \sum_{g \in G} \chi(g) = \sum_{g \in G} \chi(h+g) = \sum_{g \in G} \chi(g),$$

Page 59: Example 1.6.11.

$$W_C(x, y) = \dots = y^7 + 7x^3y^4 + 7x^4y^3 + x^7.$$

Page 93: E.2.1.3.

Characterize perfect codes by a suitable relation between $\rho(C)$ and $\text{dist}(C)$.

Page 99: first line of 2.2.14.

If there exists an (n, k, d, q) -code, then there exists an

Page 102: second line in E.2.2.2.

of codewords $c \in C$ whose parity sum $\sum_{i \in n} c_i$ equals α . Prove that either

Page 103: first line in 2.3.3.

Any linear (n, k, d, q) -code C is linearly isometric to a code

Page 104: third line in the proof of 2.3.9.

$$\phi: C_0 \rightarrow C_2 : v \cdot \Gamma_0 \mapsto v \cdot \begin{pmatrix} \Gamma_2 \\ 0 \end{pmatrix}, \quad v \in \mathbb{F}_q^{k_0},$$

Page 108: 2.3.15 The tensor product.

We recall from Multilinear Algebra (cf. exercise 2.3.4) that the *tensor product* $C_0 \otimes C_1$ of two linear codes C_0, C_1 can be defined as follows: It consists of all linear combinations of tensors

$$c \otimes c' := (c_0c'_0, \dots, c_0c'_{n_1-1}, \dots, c_{n_0-1}c'_0, \dots, c_{n_0-1}c'_{n_1-1}),$$

where $c \in C_0$ and $c' \in C_1$. In other words, if C_i is an (n_i, k_i, d_i, q) -code with generator matrix Γ_i for $i = 0, 1$, then the generator matrix of $C_0 \otimes C_1$ is the Kronecker product

$$\Gamma := \Gamma_0 \otimes \Gamma_1 := \left(\begin{array}{c|c|c} \gamma_{00}\Gamma_1 & \dots & \gamma_{0,n_0-1}\Gamma_1 \\ \dots & \dots & \dots \\ \gamma_{k_0-1,0}\Gamma_1 & \dots & \gamma_{k_0-1,n_0-1}\Gamma_1 \end{array} \right).$$

By Exercise 2.3.5 the parameters of $C_0 \otimes C_1$ are

$$(n_0 n_1, k_0 k_1, d_0 d_1, q).$$

Page 110: line 16.

$$LB(n, k, q) := \max \{d \mid (Lb, n, k, d, q)\}, \quad UB(n, k, q) := \min \{d \mid (Ub, n, k, d, q)\}.$$

Page 117: second item in E.2.3.14.

$$(A \otimes B)^\top = A^\top \otimes B^\top.$$

Page 240: in the middle of the page.

$$h = \frac{x^6 - 1}{8} = (x - 3^0)(x - 3^5) = x^2 + x + 5$$

Page 334: second line in E.4.10.4.

$$RM_{m,t}^p \text{ for } 0 \leq t < m(p-1).$$

Page 351: sixth line in Theorem 4.14.3.

where $\sigma_i = \langle y, h^{(i)} \rangle$ for $i \in r$.

Page 403: fourth line in the proof of 5.3.5.

length at most ℓ , the vector $0 + e'$ is decoded into 0, and $c - e$ is decoded into c ,

Page 643: third line of the second part of Theorem 8.4.3.

$$\mathcal{X} = \bigcup_{i: x_i > 0} \bigcup_{j=1}^{x_i} \omega_i,$$

Page 669: second line from the bottom.

For $x, y \in X$ with ...