Index

A, B
algorithm
Berlekamp-Massey, 208
forward-backward, 269, 284
Huffman, 58
Levinson-Durbin, 90
Lloyd, 82
LZ78, 65
LZW, 67
minimum-sum, 263
sum-product, 260, 263, 284, 315
Viterbi, 161, 246
audio compression, 109
automatic repeat request, 189
bound
Elias-Bassalygo, 136
Gilbert-Varshamov, 137, 290
Plotkin, 136
sphere packing, 139

code
BCH, 202
CELP, 106
concatenated, 253, 306
convolutional, 229
cyclic, 182
Golay, 143
Hamming, 128, 142
LDPC, 288, 293, 295
linear block, 127
parallel concatenated block, 330
perfect, 135
product, 333
QC-LDPC, 292
Reed Solomon, 213
Reed-Muller, 145
repetition, 128
Tunstall, 68
turbo, 306, 311

coding
arithmetic, 63
linear predictive, 104
MPEG audio, 111
run length, 58
speech, 102
subband, 99
transform, 96
variable length, 24
coding gain, 179
delta modulation, 91

c, D
capacity, 40, 43, 45, 46
channel
additive white Gaussian noise, 38, 46, 300
binary erasure, 38
binary symmetric, 34, 43, 298
discrete without memory, 36
erasure, 45, 166, 295
differential
   entropy, 15
   pulse coded modulation, 94
discrete cosine transform, 98
distortion, 30
   rate function, 81
log likelihood ratio, 255
LTE standard, 330
maximum
   a posteriori criterion, 154
   likelihood criterion, 154
mutual information, 10

E, F, G
entropy, 11, 20
error
   correction capability, 134
   detection capability, 134
   detection using CRC, 189
   syndrome, 157
error-location polynomial, 207
exit charts, 319
factor graph, 258, 286
finite field, 122, 123, 125
free distance, 242
generator matrix, 127

H, I, J
Hamming
   bound, 135
   weight, 130
hard input decoding, 152, 172
interleaver, 307, 324, 327
LOWF function, 132, 243, 244
irreducible polynomial, 123
IRWEF function, 132, 311
iterative decoding, 298, 300, 315, 331
Jensen’s inequality, 5
jointly typical sequences, 19

K, L, M
Karhunen-Loève transform, 98
Kraft inequality, 26
Kullback-Leibler divergence, 15
linear prediction, 88

N, P
non recursive coder, 231
parity check matrix, 131, 290, 310
primitif polynomial, 123
probability
   a posteriori, 254
   extrinsic, 254
   intrinsic, 254
   pairwise error, 174
puncturing, 249

Q, R, S
quantization
   non-uniform, 75
   optimal scalar, 78
   scalar, 70
   vector, 81, 86
recursive coder, 231
soft input decoding, 152, 163, 175
spectral efficiency, 52
standard array method, 158
state transition diagram, 238
syndrome decoding, 159

T, U, W
Tanner graph, 147, 332
termination, 308
trellis diagram, 148, 239
TWL graph, 241
typical sequences, 17
union bound, 173
weight enumerator function, 132