

Index

- AD conversion, 63
 - delta-sigma, 70
 - oversampling, 66
- AD converter, 79
 - characteristics, 79
 - counter, 84
 - delta-sigma, 85
 - half-flash, 83
 - parallel, 82
 - subranging, 83
 - successive approximation, 83
- AES, 101
- AES/EBU interface, 2, 101
- All-pass decomposition, 130, 132, 133
- Ambisonics, 14
- Anti-aliasing filter, 242
- Anti-imaging filter, 241
- Aperture delay, 79
- Aperture jitter, 80
- Attack time, 231
- Audio coding, 273
 - lossless, 273
 - lossy, 275
- Averaging time, 231

- Band-limiting, 63, 86, 251
- Bandwidth, 115, 121
 - relative, 115, 121
- Biphase code, 102
- Bit allocation, 290
- Boost/cut, 122, 124, 130

- Center frequency, 125, 133
- Coding
 - Intensity stereo, 303
 - Mono/side, 302
- Coding techniques, 4, 273, 284
- COFDM, 4
- Comb filter, 75
 - recursive, 200, 216
- Compact disc, 10
- Compressor, 226, 231
- Conversion time, 79
- Critical bands, 277

- DA conversion, 63
 - delta-sigma, 71
 - oversampling, 66
- DA converter, 86
 - characteristics, 86
 - delta-sigma, 92
 - R-2R networks, 92
 - switched sources, 89
 - weighted capacitors, 90
 - weighted resistors, 90
- DAB, 2, 5
- Decimation, 75, 169, 175, 246
- Deemphasis/preemphasis, 103
- Deglitcher, 87
- Delta modulation, 69
- Delta-sigma modulation, 12, 14, 66
 - decimation filter, 75
 - first-order, 68
 - higher-order, 74
 - multistage, 72

- second-order, 71
 - signal-to-noise ratio, 73
- DFT, 158
- Differential nonlinearity, 80
- Digital amplifier, 14
- Digital crossover, 16
- Digital Radio Mondiale (DRM), 8
- Digital Versatile Disc – Audio (DVD-A), 13
- Direct Stream Digital, 12
- Dither, 36, 45
- Downsampling, 242
- DSP, 98, 100, 107
- DVD, 13
- Dynamic range, 225
- Dynamic range control, 225

- Early reflections, 191, 195
- EBU, 101
- Echo density, 203
- Eigenfrequency, 191, 201, 203
- Entropy coding, 274
- Equalizers, 115
 - design of nonrecursive, 167
 - design of recursive, 119
 - nonrecursive, 157
 - recursive, 115, 128
- Expander, 226, 231

- Fast convolution, 158, 161
- FDDI, 105
- Feedback systems, 208
- FFT, 7, 280
- Filter
 - Q -factor, 125
 - all-pass, 131–133, 136, 202
 - band-pass, 115, 121, 136
 - band-stop, 115, 121
 - bilinear transformation, 128
 - constant- Q , 121
 - decimation, 169, 177, 178
 - high-pass, 135, 181
 - interpolation, 169, 177, 178
 - kernel, 169, 172, 175
 - low-pass, 134, 181
 - low-pass/high-pass, 115, 119
 - nonrecursive, 77
 - octave, 115
 - one-third octave, 116
 - peak, 117, 124, 132, 135, 136, 181
 - shelving, 117, 121, 130, 133–136, 181
- Filter bank, 5, 285
 - analysis, 4, 213
 - multi-complementary, 168
 - octave-band, 168
 - synthesis, 4, 214
- Filter structures
 - coefficient quantization, 138
 - limit cycles, 157
 - noise behavior of recursive, 143
 - noise shaping, 150
 - nonrecursive, 161, 168
 - parametric, 128
 - recursive, 138
 - scaling, 154
- Frequency density, 202
- Frequency sampling, 167

- Gain error, 80

- Hard disc recording, 1
- Huffmann coding, 274

- IDFT, 158
- Image model, 192
- Integral nonlinearity, 80
- Internet audio, 9
- Interpolation, 66, 75, 169, 174, 175, 246, 247, 254
 - Lagrange, 260
 - polynomial, 257
 - spline, 261
- ISO-MPEG1, 4, 284
 - coder, 284
 - decoder, 286

- Java applet, 59, 93, 182, 218, 238, 310

- Latency time, 78, 178, 275
- Limit cycles, 157
- Limiter, 226, 231

- MADI interface, 1, 102
- Masking, 279, 281, 284
 - index, 289
 - threshold, 279, 281, 282, 284, 289
 - global, 290
- MiniDisc, 10
- Mixing console, 1
- Monotonicity, 80
- MP3, 9, 10
- MPEG-2, 291
- MPEG-2 AAC, 292
- MPEG-4, 8, 304

- Noise
 - gate, 225, 226, 231
 - shaping, 14, 42, 47, 144, 150
- Number representation, 47
 - fixed-point, 47
 - floating-point, 53
 - format conversion, 56
- Nyquist sampling, 63

- OFDM transmission, 7
 - guard interval, 7
- Offset error, 80
- Oversampling, 14, 65
 - signal-to-noise ratio, 66

- Peak factor, 23
- Peak measurement, 118, 228, 229
- Polyphase representation, 245
- Prediction, 274
- Pseudo-random sequence, 193, 213
- Psychoacoustic models, 287
- Pulse width modulation, 14

- Q -factor, 120, 121
- Quantization error
 - correlation with signal, 34
 - first-order statistics, 30
 - noise shaping, 42
 - power, 65
 - probability density function, 22
 - second-order statistics, 32
- Quantization model, 21
- Quantization noise, 284
- Quantization step, 22, 23, 65, 247, 249
- Quantization theorem, 21, 24

- R-DAT, 10
- Ray tracing model, 192
- Real-time operating system, 97
- Release time, 231
- Resolution, 79
- Reverberation time, 191, 195, 205
 - frequency-dependent, 207
- Room impulse response, 191
 - approximation, 213
 - measurement of, 193
- Room simulation, 14, 191
- Root mean square measurement, 118, 229

- Sample-and-hold, 79
 - circuit, 63
 - function, 247
- Sampling period, 63
- Sampling rate, 2, 63
- Sampling rate conversion, 241
 - asynchronous, 246
 - multistage, 252
 - single-stage, 250
 - synchronous, 244
- Sampling theorem, 63
- Scale factor, 303
- Scaling factor, 289
- Settling time, 87
- Signal processor
 - fixed-point, 98
 - floating-point, 100
 - multi-processor systems, 109
 - single-processor systems, 107
- Signal quantization, 21

- Signal-to-mask ratio, 284, 287, 290, 291
- Signal-to-noise ratio, 23, 53, 55, 57
- Sinc distortion, 65
- Sound channel, 4
- Sound studio, 1
- SPDIF interface, 102
- Spectral Band Replication SBR, 8
- Spectral band replication SBR, 306
- Spreading function, 281
- Static curve, 226
- Storage media
 - DVD-A, 13
 - MiniDisc, 10
 - SACD, 11
- Studio technology, 1
- Subsequent reverberation, 191, 200
- Super Audio CD (SACD), 11
- Surround systems, 14
- Threshold of hearing, 46, 278, 280, 289
- Time constants, 230
- Tonality index, 280, 282
- Total harmonic distortion, 81
- Transmission techniques
 - DRM, 8
 - internet audio, 9
- Upsampling, 241
- Weighting filter
 - A-, 118
 - CCIR-468, 118
- Word-length, 23, 138