

INDEX

- Abelian group, 32
- Abstract automata, 308
- Abstract harmonic analysis, 17
- Abstract harmonic analysis on finite groups, 31
- Accuracy of DFG, 299
- Additive approximations, 249
- Additive group, 87
- Advanced Cryptography Standard, 211
- Algebraic error, 371
- Aliasing probability, 212
- α -(Anti)-self-dual, 204
- Amplitude spectrum, 373
- $(AN + B)$ -code, 415
- Anti-self-dual, 203
- Anti-self-duality group, 205
- Approximated system, 245
- Approximation of the system, 250
- Arithmetic code distance, 415
- Arithmetic distance, 415
- Arithmetic error, 371
- Arithmetic expressions, 61
- Arithmetic transform, 61
- Arithmetic-Haar transform, 515
- Assignment, 309
- Asynchronous CDMA, 539
- (Anti)-self-duality point, 205
- Autonomous automata, 342
- Basic arithmetic transform matrix, 61
- Basic Reed–Muller matrix, 20
- Basic Walsh functions, 38
- Basic Walsh matrix, 42
- Bent functions, 211
- Binary Decision Diagram, 13
- Binary Decision Tree, 11
- Bit-level expressions, 31
- Bit-level transforms, xvi
- Boolean functions, 2
- Built-in self-testing, 430
- Burst of the length b , 391

- Cartesian product, 2
- Character of a group, 87
- Characteristic of a field, 99
- Characteristic function, 206
- Check complexity, 461
- Check sum method, 431
- Chip codes, 539
- Circulant matrices, 42
- Circulants, 143
- Code Division Multiple Access, 537
- Coefficient vector, 17
- Combinational devices, 1
- Combinational networks, 27
- Compact groups, 99
- Comparable functions, 214
- Completely monotone, 214
- Complex values, 66
- Complex wavelet transform, 523
- Complexity of logic functions, 222
- Complexity of DFG, 298
- Complexity criteria, 222
- Composite transforms, 515
- Conjugate element, 33
- Conjunctive transform, 22
- Constant nodes, 12
- Constant- β slant-Haar transform, 520
- Controllabilities, 422
- Corrected error, 408
- Correcting capability, 372
- Correcting power, 372
- Cosets, 33
- Cosine transform, 516
- Cost of an error, 393
- Counting automaton, 411
- Cover of minterms, 225
- Cross-correlation functions, 79, 394
- Cyclic group, 32

- Decision diagrams, 10
- Digital devices, 1
- Digital function generator, 298
- Direct Sequence CDMA, 538
- Discrete Cosine Transform (DCT), 516
- Discrete Haar functions, 51
- Discrete wavelet packet analysis (DWPA), 523
- Discrete wavelet transform (DWT), 522
- Disjunctions, 6
- Distance functions, 316
- Distance matrices, 317
- Dual object, 100
- Duality principle, 257
- Duality property, 375
- Dyadic groups, 36
- Dyadic order, 41

- Elementary symmetric function, 180
- Elementary symmetric function with operating number k , 379
- Elementary symmetric function with the operating number α , 407
- Encoding, 309
- Entropy function, 223
- Equivalent automata, 334
- Equivalent states, 337
- Error in a finite automaton, 399
- Error locator, 492
- Error with multiplicity l , 371
- Even symmetric transform, 535
- Excitation functions, 311
- Expected l -fold errors, 407

- Factor group, 33
- False, 6
- Fast Fourier transform (FFT), 107
- Fast Hadamard–Walsh transform, 109
- Fast wavelet transform (FWT), 522
- Fault diagnosis, 428
- Fault location, 428
- Fibonacci decision diagrams, 530
- Fibonacci transforms, 523
- Field, 32
- Field Programmable Gate Arrays, 314
- Finite automaton, 308
- Finite discrete function, 2
- Finite dyadic group, 36
- Finite groups, xv

- Finite Walsh series, 44
- Fixed polarity Reed–Muller (FPRM)
 - polynomials, 23
- Fixed-polarity arithmetic-Haar, 516
- Fourier series, 34
- Free BDDs, 14
- Frequency Division Multiple
 - Access, 537
- Frequency Hopping, 538
- Function algebra, 34
- Functional testing, xx, 431
- Functionally complete, 7
- Functionally separable, 224

- Generator of a group, 32
- Global Positioning Systems, 538
- Group, 32
- Group automaton, 410
- Group characters, 41
- Group characters of Abelian groups, xv
- Group representations, xv

- Haar functions, 51
- Haar matrix, 53
- Haar ordering, 51
- Haar spectral diagrams, 198
- Haar spectral transform decision
 - diagrams, 192
- Haar transform, xvi
- Haar-Galois transform, 94
- Hadamard-Haar transform, 514
- Hadamard matrices, 42
- Hadamard ordering, 41
- Hamming code, 173
- Homomorphism, 87
- Hungarian algorithm, 321
- Hybrid transforms, 515

- Identical computation family, 54
- Implementing a function 001
 - inclusion, 32
- Index of a function, 38
- Inertia group, 205
- Initial state, 309
- Input signals, 309

- Integral Walsh functions, 259
- Internal states, 309
- Inverse conjunctive transform, 61
- Irreducible representation, 100
- Isometric (unitary), 76
- Isomorphic groups, 86

- JPEG standard, 534

- k -ary form, 257
- k -comparable, 214
- k -monotonicity, 214
- Karhunen–Loève transform, 516
- Kronecker product, 17
- Kronecker spectral transforms, 127
- Kronecker transforms, 25

- l -fold arithmetic error, 371
- l -fold error, 371
- L_2 -norm, 76
- λ_s -reachable, 417
- Least-absolute-error
 - approximation, 480
- Length of a switching function, 225
- Levels in a decision diagram, 13
- Linear (m, k) -code, 205
- Linear functions, 47
- Linear automata, 408
- Linear combination, 19
- Linear span, 436
- Linear transform, 17
- Linearity group, 187
- Linearity point, 187
- Linearization of logic
 - functions, 227
- Linearization problem, 228
- Lipschitz class, 303
- Literal function, 6
- Local behavior, 56
- Locally compact Abelian groups, 74
- Logic *NAND*, 8
- Logic *NOR*, 8
- Logic ordering, 42
- Logic product, 401
- Look-up-table, 348

- Majority decoding, 451
- Majority function, 377
- Matching of minterms, 226
- Matching problem, 344
- Maxterm, 6
- Mealy model of automata, 309
- Mean-square distance, 299
- Minimal automata, 399
- Minimal cardinality of a check subgroup, 431
- Minimal complete set of implicants, 225
- Minimal disjunctive form, 225
- Minimal symmetric matching, 321
- Minimum length code, 314
- Minimum Reed–Muller expansion, 24
- Minterm, 6
- Moore model of automata, 309
- Mother wavelet, 521
- Multioutput function, 2
- Multiple- β slant-Haar transform, 520
- Multiple-Place Decision Diagrams, 16
- Multiple-valued functions, 2
- Multiplicative closure, 40
- Multiplicative group, 86
- Multiplicity of an error, 372
- Multiterminal Binary Decision Diagrams, 14
- Multiterminal decision diagrams, 103
- n -monotone, 214
- Natural ordering, 40
- Negative Davio expansion, 23
- Negative line, 427
- Negative literal, 6
- Netlists, 2
- Next-state function, 309
- Non-Abelian group, 98
- Noninteger number, 475
- Nonrepetitive quadratic form, 207
- Nonsymmetric error, 382
- Nonterminal nodes, 12
- Normal subgroup, 33
- Normalized transform, 51
- Observabilities, 422
- OmniTRACS, 538
- 1-hot bit encoding, 314
- 1-minterms, 6
- 1-step majority decoding procedure, 493
- Optimal approximation, 250
- Optimal equality checks, 474
- Optimal linear checks, 431
- Optimal linear equality checks, 434
- Ordered BDT, 13
- Orthogonal checks, 447
- Orthogonal Frequency Division Multiplexing, 47
- Orthogonal inequality, 489
- Orthogonal series, 35
- Orthogonal subgroup, 434
- Output function of an automaton, 309
- Output functions, 1
- Output signals, 308
- Packet, 40
- Paley ordering, 40
- Parametrized transforms, 515
- Parity function, 48
- Parseval theorem, 104
- Partially anti-self-dual, 204
- Partially linear, 237
- Partially self-dual, 204
- Partition, 416
- Path, 13
- Perfect code, 172
- π -complexity, 223
- Piecewise-linear, 259
- Polynomial approximation, 244–245, 252
- Positive Davio expansion, 20
- Positive literal, 6
- Positive line, 426
- Positive polarity Reed–Muller polynomial, 20
- Positive polarity Reed–Muller expressions, 20
- power of f_i , 376

- Power to average power ratio, 540
- Prime implicant, 225
- Principle character, 104
- Product-of-Sum, 8
- Products, 6
- Programmable Logic Array, 314
- Proper subgroup, 33
- Proper subset, 32
- Pseudo Noise, 539

- Quadratic form, 207
- Quaternion group, 97
- Quotient group, 33

- Rademacher functions, 38
- Random Access Memories, 422
- Random Access Memory, 49
- Read Only Memories, 49
- Reducible representations, 100
- Reduction rules, 13
- Reed–Muller functions, 20
- Reed–Muller matrix, 20
- Reed–Muller spectrum, 22
- Reed–Muller transform, 20
- Representations of functions, 2
- Ring, 33
- Ring of integers, 2
- Root node, 12

- Schauder functions, 299
- Self-dual functions, 204
- Self-duality point, 478
- Sequence generators, 304
- Sequency, 40
- Sequency order, 40
- Sequential machines, 1
- Sequential networks, 27
- Serial implementation, 349
- Shannon expansion, 9
- Shared BDDs, 15
- Simplicity of functions, 227
- Sinc function, 521
- Single-threshold switching
 - functions, 213
- Size of the BDD, 154

- Slant transform, 516
- Slant-Haar transform, 518
- Slant-Hadamard transform, 517
- Slantlet transform, 520
- Span, 36
- Spectral domain, 17
- Spectral complexity, 255
- Spectral decision diagram, 189
- Spectral decision tree, 189
- Spectral decomposition rule, 189
- Spectral expansions, 28
- Spectral representation, 17
- Spectral Transform Decision
 - Diagrams, 128
- Spectral Transform Decision Trees, 128
- Spectrum, 35
- Speed of a DFG, 299
- State diagram, 309
- State encoding, 309
- State functions, 1
- State table, 309
- State-input assignment, 309
- Steganalysis, 537
- Steganography, 537
- Structural finite automata, 308
- Stuck-at-one, 423
- Stuck-at-zero, 423
- Subset, 32
- Sum-of-Product, 8
- Switching functions, 2
- Symmetric arithmetic errors, 415
- Synthesis of the network, 27

- Threshold elements, 212
- Time Division Multiple Access, 537
- Total autocorrelation functions, 228
- Total cross-correlation functions, 281
- Tree-structured Haar transforms, 537
- True, 6
- Truth tables, 10
- Truth vectors, 10

- Unate line, 426
- Unidirectional arithmetic error, 381
- Unidirectional errors, 509

- Uniform approximation, 55
- Uniform distance, 299
- Unitary representations, 98
- Unnormalized transform, 51

- Varshamov bound, 483
- Varshamov–Gilbert bound, 465
- Vector space, 33
- Vilenkin–Chrestenson transform, 72
- Vilenkin–Chrestenson–Galois, 94

- Walsh, 72
- Walsh analysis, xv
- Walsh coefficients, 44
- Walsh functions, xv
- Walsh functions of first order, 38
- Walsh matrix, 45
- Walsh ordering, 40

- Walsh spectrum, 44
- Walsh–Galois transform, 94
- Walsh–Hadamard functions, 42
- Walsh–Hadamard matrix, 42
- Walsh–Kaczmarz ordering, 41
- Watermarking, 537
- Wavelet functions, 51
- Wavelet packet decomposition (WPD), 522
- Wavelet packet transforms (WPT), 522
- Wavelet transforms, 520
- Wavelets theory, xvi
- Weight, 38
- Weighted total cross-correlation function, 394
- Wiener–Khinchin theorem, 104
- Word-level expressions, 31
- Word-level transforms, xvi