
INDEX

- Admittance matrices, 225
- Anisotropic perfectly matched layer (APML),
125, 183, 244, 273
 corner-APML, 130, 345
 edge-APML, 129, 338
 face-APML, 126, 330
- Anisotropic perfectly matched layer (APML)
orientations, 125
- Anisotropic perfectly matched layer (APML)
parameters, 133, 186
- Automatic image generator (AIG) technique,
108, 117, 118
- Band-pass filter, 234, 236
- Battle–Lemarie scaling function, 41, 180, 248
- Battle–Lemarie spline multiresolution analysis,
41
- Battle–Lemarie wavelet function, 41, 83
- Biorthogonal multiresolution analysis, 29, 30,
66
- Bistatic scattering, 240
- Blackman–Harris window (BHW) function,
132, 191
- Box function, 24
- B-spline functions, 36, 38, 350, 353
- Cavity, 121, 122, 217, 218
- Cohen–Daubechies–Feauveau (CDF) family,
68, 180, 245
- Coiflet family, 59, 61
- Coiflet scaling and wavelet functions, 62, 180,
245, 249
- Compact support, 36
- Constitutive relation, 111
- Co-polarization, 286
- Cross-polarization, 286
- Cubic spline Battle–Lemarie multiresolution
analysis, 43, 44, 46, 355
- Daubechies multiresolution analysis, 48, 50, 51
- Daubechies scaling and wavelet function, 48,
51, 180, 225, 245, 248
- Designated reflection coefficient, 244, 273
- Dielectric cylinder, 242
- Dielectric-filled cavity, 216
- Dielectric flat plate, 290, 293, 294
- Differentiability, 35
- Effective dielectric constant, 187, 219, 225, 230
- Empty cavity, 121
- Equivalent scattered electric and magnetic
currents, 284
- Extended discontinuity subregion, 158
- Expansion coefficients, 98
- Field expansions, 32, 146, 209, 329
- Finite difference time domain (FDTD)
approach, 78, 79
- Frequency-domain voltage and current, 178
- Frequency-time converter, 127

- Galerkin's method, 85, 111, 173, 180, 199, 202, 245
- Gaussian incident plane wave, 252
- Generalized differential matrix operators (GDMOs), 91, 209, 243, 297, 299, 302, 304, 328
- Gibbs phenomenon, 190
- Haar-based multiresolution time domain, 174
- Haar multiresolution analysis, 24
- Half-filled dielectric cavity, 122
- Hat function, 28
- Image principle and images, 113, 132, 178, 213
- Incident field, 203
- Integral coefficients, 88, 89, 154, 166, 189, 323
- Integral relations, 105, 309, 310, 313, 320
- Linear interpolation, 253, 282
- Linear spline multiresolution analysis, 28
- Lossless dielectric flat plate, 292
- Lossless target, 257, 274
- Lossy dielectric flat plate, 292
- Lossy target, 258, 279
- Low-pass filter, 232, 234, 235
- Method of moments (MoM), 80
- Microstrip line, 137, 178, 183, 187, 195, 211, 216, 218, 219
- Microwave network, 226
- Millimeter wave integrated circuits (MMICs), 223
- Monostatic scattering, 240
- Multiple images, 113
- Multiple-target system, 247
- Multiresolution analysis (MRA), 14, 16, 18, 31, 36
in frequency domain, 18
- Multiresolution analysis (MRA) family, 35, 36
- Multiresolution time domain–multiple image technique (MRTD–MIT), 108, 111, 118, 119, 122, 208
- Multiresolutional time domain (MRTD) scheme, 31, 35, 78, 82, 91, 124, 145, 177, 208, 238, 271
- Multiresolutional wavelets, 31
- Near-to-far-zone transformation, 254, 260, 284
- Open boundary, 124
- Open microstrip line, 134, 183, 196
- Orthogonal expansion, 12
- Orthogonal relations, 105, 307
- Orthogonal scattering coordinate system, 283
- Orthogonality, 36
- Parallel waveguide structure, 196, 202, 203, 205
- Patch antenna, 231, 233
- Perfect electric conductor (PEC)
boundary, 108, 115
cube, 286, 287
parallel-plane, 200
plate, 287, 290–292
target, 277
- Perfect magnetic conductor (PMC), 108
- Periodic stratified system, 173
- Plane wave, 252, 282
- Polarization, 286
- Printed transmission lines, 177, 192
- Projection theorem, 11
- Propagation characteristic, 187, 219–221, 225, 230, 231, 245
- Propagation constant, 179
- Pure scattered electromagnetic field, 240, 272
- Radar cross section (RCS), 239, 261, 285
- Rectangular dielectric cylinder, 262–268
- Rectangular waveguide, 133
- Rectangular window (RGW) function, 190, 191
- Relative permittivity, 180, 210
- Resonant frequency, 122, 123
- Riesz bases, 12
- Scaling function, 17
- Scattering matrix, 227
- Scattering parameters, 231
- Scattering width, 239, 257
- Scattering width-MRTD, 78, 79, 93, 103, 146, 147, 169
- Shielded microstrip line, 178, 187, 194
- Smoothness, 35
- S-MRTD, 78, 79, 93, 102, 109, 167, 169
- S parameters, 228, 236
- Spectral domain approach (SDA), 192, 194
- Spline multiresolution analysis, 36
- Square PEC cylinder, 261, 262
- Stability criteria, 102
- Subspace, 10

- TE_z and TM_z wave, 197, 198, 201, 203, 205, 241, 244, 254, 259, 260
- TEM_x model, 145, 147, 158, 172, 224
- Time-domain voltage and current, 188, 228
- Total fields, 104, 201, 239, 256
- Transmission line equation, 79
- Vector space, 8
- Wavelets, 17, 29, 31
- Yee FDTD lattice, 93