Ahlfors-regular, 292 almost analytic extension, 237 analytic disk, 127 analytic hypoelliptic, 235 analytic wave front set, 234 approximate solution, 101, 132

Baouendi–Treves approximation theorem, 53 in Hölder spaces, 76 in Hardy spaces, 79 in Lebesgue spaces, 70 in Sobolev spaces, 73 boundary values, 271 of holomorphic functions, 230

Cauchy problem, 108 C^{∞} wave front set, 236 characteristic set, 15, 132 complex conormal bundle, 33 complex structure, 114, 219 complex tangent space, 6, 220 complex tangent vector, 6 complex vector sub-bundle of $\mathbb{C}T\Omega$. 6 of $\mathbb{C}T^*\Omega$. 9 complexified cotangent bundle, 9 complexified tangent bundle, 6 convergence nontangential, 282 pointwise, 271 CR function, 19, 118 CR manifold, 218 CR structure, 104

differentiable structure, 1 differential complex associated with a formally integrable structure, 312 one-sided solvability, 320 solvability in degree q, 315 the associated cohomology, 315 differential form q-form, 308 one-form, 7 pullback, 33 real-analytic one-form, 14 direct limit, 315

elliptic, 140 elliptic structure, 145 exactness in the sense of germs, 313 exterior differentiation, 309 exterior product, 308

F. and M. Riesz theorem, 263 FBI transform, 226, 242 fiber. 6 finite type, 110 formally integrable structure, 7 Cauchy-Riemann (CR), 16 complex, 16 corank, 7 elliptic, 16 essentially real, 16 Hans Lewy, 37 nondegenerate, 43 rank. 7 real-analytic, 14 tube, 24 Fourier transform, 226 Frobenius theorem, 11

390

function C^k 2 real-analytic, 14 smooth, 2 germ of a smooth function, 5 Gronwall's inequality, 141 Hölder space, 76 Hamiltonian, 251 Hardy space, 78, 287 H^p property, 287 a priori estimates, 163 Hausdorff measure, 141 holomorphic extension, 118 hypoanalytic chart, 371 function, 239, 371 manifold, 218 structure, 239, 370 wave front set, 242 hypoanalyticity, 239 hypocomplex, 134 integral curve, 101 invariant set, 110 Levi condition, 45 Levi form, 43 Lie algebra, 4, 104 Lie bracket, 4 linearized operator, 244 local chart, 2 locally integrable structure, 19 locally solvable vector fields, 151 manifold differentiable (smooth), 2 hypoanalytic, 371 real-analytic, 2 maximal function Hardy-Littlewood, 292 nontangential, 285, 291 microlocal analyticity, 234 microlocal smoothness, 237 minimality, 118 Mizohata, 214 structures, 365 in higher dimensions, 367 local integrability, 368 of standard type, 367

vector field, 15, 287, 364 nonsolvability, 365 of standard type, 365 Newlander-Nirenberg theorem, 26 Nirenberg–Treves condition (\mathcal{P}) , 154, 287 noncharacteristic, 108 one-sided locally integrable, 288 locally solvable, 287 operator Hans Lewy, 37 Mizohata, 15 orbit, 101 almost everywhere minimal, 122 analytic, 104 embedded, 103 immersed, 107 overdetermined system of nonlinear pde, 47 elliptic, 47 linearization, 47 linearization at a point, 47 Paley-Wiener Theorem, 226 planar vector fields solvability in C^{∞} , 183 solvability in bmo, 175 solvability in Lebesgue spaces, 156 pullback pulback homomorphism, 310 section. 7 sheaf of hyperfunctions, 372 similarity principle, 361 application to bending of surfaces, 363 applications to uniqueness, 362 solution classical, 7 hyperfunction, 373 weak. 7 solvability condition $(\star)_q$, 347 solvability in top degree, 358 submanifold embedded, 32 codimension, 32

submanifold (cont.) compatible (with a formally integrable structure), 34 generic, 35 generic CR, 223 maximally real, 225 strongly noncharacteristic, 225 weakly embedded, 107 support, 108

tangent bundle, 103 tempered growth, 231 the Box operator, 337 the edge-of-the-wedge theorem, 235 the intersection number, 340 totally real, 221 trace, 273 transversal order, 115 tube structure, 235

unique continuation, 101 global, 110 vector bundle real-analytic, 14 vector field complex, 2 Hans Lewy, 37 holomorphic, 13 Mizohata, 15 real. 11 real-analytic, 14 symbol, 15 vector fields in several variables solvability in C^{∞} , 196 in Lebesgue spaces, 195 necessary conditions for, 211

wedge, 239