
Index

- A**, category of Boolean algebras, 70
adjoint functors, 234
adjoint sequence, 491
 \aleph -injective, 211
 \aleph_α , 3
 \aleph -projective, 209
(\aleph, \aleph')-injective space, 349
(\aleph, \aleph')-universal disposition, 349
almost disjoint family, 60
almost isometric \mathcal{C} -extension property, 372
 $\alpha_N(X)$, 418
Aoki–Rolewicz theorem, 10
AP, λ -AP, approximation property, 6
 αp , approximation property Boolean algebra, 430
Asplund space, 483
*-extension property, 428
atomic space, 466
 \mathcal{A} -trivial sequence, 113
AUD, almost universal complemented disposition, 300
AUD, almost universal disposition, 290
automorphic space, 330
automorphic space problem, 336
automorphy index $\alpha(Y, X), \alpha(X)$, 356
- B**, category of Banach spaces, 70
 $B(X, Y)$, 155
B-convex space, 21
Baer sum, 202
balance principle for singular sequences, 450
Banach envelope, 12
Banach space, 9
Banach–Mazur distance $d(X, Y)$, 4
Behrend’s lemma, 42
Bell–Marciszewski sequence, 62
- $\beta\mathbb{N}$, 27
Boolean algebra, 2
Boolean homomorphism, 2
bounded approximation property, BAP, 6
Bourgain–Pisier space $\mathcal{L}_\infty^{\text{BP}}(X)$, 109
Bourgain ℓ_1 -sequence, 66
Bourgain–Pisier sequence, 109
 \mathcal{B} , Bourgain’s space, 67
- $C(\Delta_{\mathcal{M}})$, 61
 $C_0(\Lambda_{\mathcal{M}})$, 61
 $c_0(I)$, 5
Cantor set, Δ , 27
cardinal, 2
CC space, 104
CCKY problem, 424
centralizer, 185
 \mathcal{C} -extension property, 372
 \mathcal{C} -extensible space, 373
Ciesielski–Pol sequence, 61
 $C_r^{(p)}$, 5
 $C(\mathbb{N}^*)$, 27
 $C_0^{(p)}$, 5
 $C_\infty^{(p)}$, 5
 $c(\mathbb{N}, X_n)$, 65
 $ck(X)$, 82
cokernel, 70
compact operator, 7
compact space, 3, 27, 31
 \mathfrak{B} , ideal of completely continuous operators, 7
complementably block-saturated, 456
complementably minimal space, 15
complemented subspace, 13
completion, 11
completion of an exact sequence, 69
 CH , continuum hypothesis, 1

- $\text{co}^{(p)}(X)$, 180
 coproduct, 71
 Corson compact, 31
 cosingular quasilinear map, 465
 cotype q space, 22
 \mathcal{C} -space, 5
 \mathcal{C} -trivial embedding, 372
 $c_0^{\mathcal{U}}(I, X_i)$, 24
- $D([0, 1]; N)$, 58
 dense tree map, 459
 derived functor, 237
 derived set, 3
 Device, the, 105
 diagonal principle, injective, 97
 diagonal principle, projective, 96
 diagonal pullback sequence, 92
 diagonal pushout sequence, 92
 Diamond lemma, 120
 Dierolf's theorem, 150
 $\dim(X)$, dimension of a quasi-Banach space, 5
 direct sum, 71
 disjoint singularity, 463
 Domański's work, 190
 dual 1-linear map, 170
 dual sequence, 491
 Dunford–Pettis property, 26
- Eberlein compact, 31
 ε -isometry, 4
 \sim , equivalence of quasilinear maps, 140
 equivalent embeddings, 354
 equivalent exact sequences, 49
 equivalent positions, 354
 equivalent quasilinear maps, 140
 exact sequence, short, 48
- Ext , 198
 $\text{Ext}_{\mathbf{B}}$, 208
 $\text{Ext}_{\mathbf{LB}}$, 208
 $\text{Ext}_{\mathbf{B}}^{\text{inj}}$, 219
 $\text{Ext}_{\mathbf{B}}^{\text{Proj}}$, 217
 extensible space, 330
 extension of X by Y , 50
 extension of an operator, 5
 Ext^2 , 240
- $\mathsf{F}_0(X)$, $\mathsf{F}_1(X)$, 350
 FDD, 6
 Fenchel–Orlicz space, 38
 $\mathcal{F}, \mathcal{F}^{(p)}$, finite-dimensional spaces, 5
 $\mathcal{F}(X)$, 5
- \mathfrak{F} , ideal of finite-rank operators, 7
 finitely automorphic space, 345
 finitely projective space, 252
 $\text{fin}(S)$, finite subsets, 1
 Foiaş–Singer sequence, 57
 Fraïssé sequence, 290
 function space, 6
 functor, 198
- GCH, generalised continuum hypothesis, 1
 GL-l.u.st, 482
 $[\square]$ property, 299
 Grothendieck property, 26
 Grothendieck theorem, 8
 Grothendieck–Pietsch theorem, 8
 groundless set, 42
 \mathbb{G} , Gurariy space, 290
 \mathbb{G}_p , p -Gurariy space, 297
- HBEP, 149
 height of a compact, 3
 H.I. space, 18
 homology sequences, 204
 H_p , 13
- indecomposable space, 18
 injective presentation, 82
 injective space, 82
 \approx , isometric spaces, 4
 isometric exact sequences, 54
 isometrically exact sequence, 49
 isometry, 4
 \simeq , isomorphic spaces, 4
 isomorphic exact sequences, 52
 isotropic, almost, 297, 312
- James space J , 495
 James-tree space JT , 100
 Johnson–Lindenstrauss space JL_p , 102
 Johnson–Zippin theorem, 411
- \mathbf{K} , category of compact spaces, 70
 \mathbf{K}_0 , category of Stone compacta, 70
 \mathfrak{K} , ideal of compact operators, 7
 Kadec spaces, 312, 502
 \mathbb{K}_p , p -Kadec space, 304
 Kalton's singular sequence, 465
 Kalton's singular space W , 465
 $\mathbb{K}\mathbb{P}_\varphi$, 135
 $\mathbb{K}\mathbb{P}_{p,\varphi}$, Kalton–Peck map, 173
 $\mathbb{k}\mathbb{P}_\varphi$, 135

- Kalton–Peck map, 135
 Kalton–Roberts theorem, 151
 $\kappa_p(X)$, 80
 $K[X, Y]$, 159
 $K^{(p)}[X, Y]$, 161
 $K_0[X, Y], K_0^{(p)}[X, Y]$, 232
 kernel, 70
 Koszmider problems, 433
 KPP, Kalton–Pełczyński property, 209
 \mathcal{K} -space, 149
 Kwapien's theorem, 22
 \mathfrak{L} , ideal of all operators, 7
 $L(X, Y)$, 155
 λ -extension, 5
 $\lambda(Y, X)$, 14
 limit of a diagram, 119
 limit ordinal, 3
 Lindenstrauss p -lifting, 256
 Lindenstrauss envelope, 501
 Lindenstrauss lifting, 162, 252
 Lindenstrauss space, 19
 Lindenstrauss–Pełczyński theorem, 378
 Lindenstrauss–Pełczyński space, 497
 Lindenstrauss–Rosenthal theorem, 336
 linearization, 235
 linearization of a quasilinear map, 179
 \mathcal{L}_∞ -envelope, 500
 Lipschitz-free space $\mathcal{F}(X)$, 236
 local projection, 245
 local splitting, 245
 locally \mathscr{E} space, 263
 locally complemented subspace, 245
 locally injective space, 251
 locally projective, 252
 $L_p(\mu), L_p, L_0$, 12
 $\ell_p(I), \ell_p(\aleph)$, 5
 $\ell_\infty(I)$, 5
 $\ell_p(\varphi)$, 136
 (L) property, 394
 (L^*) property, 392
 \mathcal{L}_p -space, 19
 \mathcal{L}_p -space, $0 < p < 1$, 256
 l.u.st, 480
 m_1 -type property, 403
 MA, Martin's axiom, 431
 Maurey extension property, 22
 Maurey–Pisier theorem, 22
 M -ideal, 114
 minimal extension, 149
 minimal space, 15
 modular sequence space, 38
 (M) -property, 440
 (M^*) -property, 440
 Nakamura–Kakutani sequence, 61
 \mathbb{N}^* , 27
 natural transformation, 201
 near-Hilbert space, 22
 non-linear Hahn–Banach theorem, 167
 \mathfrak{N} , ideal of nuclear operators, 7
 nuclear operator, 7
 ω , 2
 ω^N, ω^ω , 27
 ω -skeleton, 504
 opposite category, 198
 ordinal, 2
 Orlicz function, space, 38
 oscillation of a function, $\text{osc } f(s)$, 56
 $p\mathbf{B}$, category of p -Banach spaces, 70
 p -Banach envelope, 11
 p -linear map, 159
 p -norm, 10
 \mathfrak{P}_p , ideal of p -summing operators, 8
 p -summing operator, 8
 parallel lines principle, 96
 Parovičenko theorems, 27
 partially automorphic space, 361
 Pełczyński property (V), 26
 Pełczyński's decomposition method, 14
 Pełczyński–Lusky sequence, 65
 $\pi_N(X)$, 416
 polyhedral space, 471
 polyhedron, 376
 position, 354
 $\mathcal{P}(S)$, power set, 1
 $\mathcal{P}_\infty(S)$, infinite subsets, 1
 $\mathcal{P}_n(S)$, 1
 PRI, 30
 primary space, 15
 prime space, 15
 principle of local reflexivity, 19
 product, 71
 projection, 13
 projective presentation, 78
 projective space, 78
 projectively equivalent exact sequences,
 54
 pseudodual, 25

- pullback, 74
 pushout, 73
Q, category of quasi-Banach spaces, 70
 $Q(X, Y)$, 155
 $Q_L(X, Y)$, 156
 $Q_{LB}(X, Y)$, 156
 $Q_{\mathcal{H}}(X, Y)$, 176
 $Q^{(p)}(X, Y)$, 159
 $Q_{LB}^{(p)}(X, Y)$, 161
 $Q(\Phi)$, 131
 $Q^{(p)}(\Phi)$, 159
 $Q_0^{(1)}(\Phi)$, 168
 $Q_{\mathcal{H}}^{(p)}(X, Y)$, 180
 quasi-Banach space, 9
 quasilinear map, 131
 quasinorm, 9
 retraction, 51
 $\rho_N(X)$, 416
 Ribe's map, 132
 rigid space, 18
 RNP, 477
 Roelcke's lemma, 67
 Rosenthal property (V), 26

 \mathfrak{S} , ideal of strictly singular operators, 7
 scattered, 4
 S_p , Schatten class, 13
 Schauder basis, 6
 Schreier space \mathbb{S} , 284
 section, 51
s(pB), category of semi- p -Banach spaces, 70
 separable complementation property, 30
 $\mathcal{S}, \mathcal{S}^{(p)}$, separable spaces, 5
 $\mathcal{S}(X)$, 5
 separably injective, 29
 sequence space, 6
S, category of sets, 70
 $\Sigma_1(\lambda)$ property, 387
 $\sigma_n(2^S)$, 62
 singular exact sequence, 444
 singular quasi-linear map, 445
 skeleton, 306
 Snake lemma, 121
 Sobczyk's space, 32
 Sobczyk's theorem, 29, 42, 260, 468
 Sobczyk's theorem, vector-valued, 260
 split exact sequence, 51

 spreading model, 414
sQ, category of semi-quasi-Banach spaces, 70
 Stone–Čech compactification, 27
 strictly cosingular operator, 465
 strictly singular operator, 7
 strictly transitive space, 345
 successor ordinal, 3
 SUD, separable universal disposition, 107
 summable Szlenk index, 422
 super singularity, 462

 3-lemma, 50
 3-lemma topologised, 54
 3-space problem, 67
 topologically exact sequence, 67
 totally disconnected, 4
 transfer principle, 451
 transitive space, 345
 tree-generated map, 418
 trivial exact sequence, 50
 trivial quasilinear map, 140
 Tsirelson's space T, 285
 twisted Hilbert space, 137
 $Y \oplus_{\Phi} X$, twisted sum space, 130
 type p space, 20
 type on a Banach space, 389

 UAP, 7
 UD, universal disposition, 330
 UFDD, 6
 UFO space, 332
 ult(\mathfrak{A}), 2
 ultrafilter, countably incomplete, 23
 ultrafilter, free, 23
 ultraproduct $[X_i]_{\mathcal{U}}$, 24
 ultraproduct operator $[T_i]_{\mathcal{U}}$, 24
 ultraproduct, set-theoretic, 39
 ultraproducts, 22
 ultrasummand, 24
 uniform boundedness principles, 258
 uniformly extensible space, 330
 universal complemented disposition, 503
 universally separably injective, 486

 Valdivia compact, 31
V, category of vector spaces, 70
 version of a quasilinear map, 176
 Vogt's duality problem, 100, 490

- \mathfrak{W} , ideal of weakly compact operators, 7
WCG space, 30
weak*-null tree map, 418
weakly compact operator, 7
weight of a compact, 3
 X -automorphic space, 361
 $X(\varphi)$, 136
 X^0, Y^0, U^0 , subspace of finitely supported sequences, 134
 \mathcal{Y}_p , Yost's space, 103
Young function, 38
zero-dimensional compact, 4
ZFC, 1
Zippin selector, 375
Zippin's problem, 411
Zippin's theorem, 30
 Z_p , 137, 505, 512
 Z_2 , 137, 512, 516
 $Z(\Phi)$, 131

