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# Symbols

$X, Y, \dots$	Banach spaces
$\mathfrak{A}, \mathfrak{B}, \dots$	Banach algebras
$X^*$	dual space of $X$
$X_*$	predual space of $X$
$X_{\mathbb{R}}$	complex Banach space $X$ considered as a real space
$J^\#$	cf. Remark I.1.13
$X^\#$	cf. Definition IV.3.8
$X_s$	<i>the</i> complementary $L$ -summand of an $L$ -embedded space $X$
$J^\theta$	metric complement of $J$
$Y^\perp$	annihilator of subspace $Y \subset X$
$Y_\perp$	elements being annihilated by $Y \subset X^*$
$J_D$	$M$ -ideal of continuous functions vanishing on the set $D$
$X \cong Y$	$X$ is isometric to $Y$
$X \simeq Y$	$X$ is isomorphic to $Y$
$d(X, Y)$	Banach-Mazur distance between $X$ and $Y$
$B_X$	closed unit ball of $X$
$S_X$	unit sphere of $X$
$B_X(x, r)$	$\{y \in X \mid \ y - x\  \leq r\}$
$i_X$	natural embedding of $X$ into $X^{**}$
$\pi_{X^*}$	natural projection from $X^{***}$ onto $X^*$
$P_J(x)$	set of best approximations to $x$ from $J$
$\ T\ _e$	essential norm of $T$
$\mathbb{K}$	$\mathbb{R}$ or $\mathbb{C}$
$\mathbb{T}$	complex numbers of modulus 1
$\mathbb{D}$	open unit disk in the complex plane
$\mathbb{S}$	$\{z \in \mathbb{K} \mid  z  = 1\}$

$A$	disk algebra
$H^p, H_0^p$	Hardy spaces
$h_M, \ell_M$	Orlicz sequence spaces
$H_M, L_M$	Orlicz function spaces
$\Lambda(N), \tilde{\Lambda}(N)$	cf. Section VI.6
$d(w, 1)$	Lorentz sequence space
$L^{p,1}, L^{p,\infty}$	Lorentz function spaces
$\ell^p(n)$	$n$ -dimensional $\ell^p$ -space
$\ell^p(X)$	vector valued $\ell^p$ -space
$L^0(\mu)$	space of (equivalence classes of) measurable functions
$L_\Lambda^1, M_\Lambda$	space of $\Lambda$ -spectral $L^1$ -functions resp. measures
$C_0(S)$	space of continuous functions on $S$ vanishing at infinity
$C(S)$	space of continuous functions on $S$ ( $S$ compact Hausdorff)
$M(S)$	space of regular Borel measures on $S$
$\text{Mult}(X)$	multiplier algebra of $X$
$Z(X)$	centralizer of $X$
$\text{Cun}(X)$	Cunningham algebra of $X$
$\text{Mult}_{\text{inn}}(\mathfrak{A})$	inner elements of $\text{Mult}(\mathfrak{A})$
$Z_{\text{inn}}(\mathfrak{A})$	inner elements of $Z(\mathfrak{A})$
$a_T(\cdot)$	symbol of $T \in \text{Mult}(X)$
$\overline{M}^{w*}$	weak* closure of $M$
$\overline{M}^w$	weak closure of $M$
$\text{int } M$	interior of $M$
$\text{ex } M$	extreme points of $M$
$\text{sexp } M$	strongly exposed points of $M$
$\text{co } M$	convex hull of $M$
$\text{lin } M$	linear hull of $M$
$E_X$	$\text{ex } B_{X^*} / \sim$ where $p \sim q$ if they are linearly dependent
$Z_X$	$\overline{\text{ex}}^{w*} B_{X^*} \setminus \{0\}$
$\ker T$	kernel of an operator $T$
$\text{ran } T$	range of an operator $T$
$L(X, Y)$	space of bounded operators from $X$ to $Y$
$K(X, Y)$	space of compact operators from $X$ to $Y$
$K_{w^*}(X^*, Y)$	space of weak*-weakly continuous compact operators from $X^*$ to $Y$
$A(X, Y)$	space of approximable operators (i.e. norm limits of finite rank operators) from $X$ to $Y$
$F(X, Y)$	space of finite rank operators from $X$ to $Y$
$N(X, Y)$	space of nuclear operators from $X$ to $Y$
$L(X), \dots$	corresponding space of operators from $X$ to $X$
$X \widehat{\otimes}_\varepsilon Y$	completed injective tensor product
$X \widehat{\otimes}_\pi Y$	completed projective tensor product

$X \oplus_1 Y$	direct sum of $X$ and $Y$ equipped with the sum-norm
$X \oplus_p Y$	direct sum of $X$ and $Y$ equipped with the $\ell^p$ -norm
$X \oplus_\infty Y$	direct sum of $X$ and $Y$ equipped with the max-norm
$\sigma(X, J^*)$	cf. Remark I.1.13
$s_{op}$	strong operator topology
$w_{op}$	weak operator topology
$\mathbb{H}(\mathfrak{A})$	hermitian elements of $\mathfrak{A}$
$e$	unit of a unital Banach algebra
$L_a, R_a$	multiplication operator $x \mapsto ax$ resp. $x \mapsto xa$
$M_a$	multiplication operator in the commutative case
$S_{\mathfrak{A}}$	state space of $\mathfrak{A}$
$M_{\mathfrak{A}}$	maximal ideal space of a function algebra $\mathfrak{A}$
$\mathfrak{A}_{\mathfrak{J}}$	cf. Proposition V.3.5
$\Pi(X)$	$\{(x^*, x) \in B_{X^*} \times B_X \mid x^*(x) = 1\}$
$V(T)$	spatial numerical range of $T \in L(X)$
$v(a, \mathfrak{A})$	numerical range of $a \in \mathfrak{A}$
$\Gamma$	dual group of a compact abelian group $G$
$\widehat{f}(\cdot)$	Fourier transform of $f \in L^1(G)$
$\varphi_\gamma$	character $f \mapsto \widehat{f}(\gamma)$ on $L^1(G)$
$f_x$	translate of $f \in L^1(G)$ , $f_x(y) = f(xy)$
$\langle \cdot, \cdot \rangle$	natural duality
$\chi_A$	indicator function of a set $A$
$\{f \leq a\}$	$\{x \mid f(x) \leq a\}$
$\mathfrak{C}A$	complement of $A$
dens $X$	density character of $X$
$P/X$	cf. Lemma I.1.15
$d_\mu$	metric of convergence in measure
$d(x, Y)$	distance of $x \in X$ to $Y \subset X$
$\alpha L$	one-point compactification of the locally compact space $L$
$\delta_x$	Dirac measure



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