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One-parameter Semigroups of Positive Operators

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Contents

List of Symbols

$E_{\mathbb{R}}$, $E_{\mathbb{C}}$	real, complex Banach lattice
E_+	positive cone of an ordered vector space
E'	dual Banach space
E^*	semigroup dual
$E_{\mathcal{F}}^{\mathcal{T}}$	$\mathcal{F}$-product of E with respect to the semigroup $\mathcal{T}$
$E_{\mathcal{F}}$	$\mathcal{F}$–product of E
E_f	see C-I, 4
(E, φ)	see C-I, 4
$E \otimes F$	tensor product
$\mathcal{L}(E)$	bounded linear operators on E
$\mathcal{Z}(E)$	center of E
E_n	n-th Sobolev space
$\mathcal{B}(H)$	W*-algebra of all bounded linear operators on H
$S(M)$	state space of a C*-algebra M
M_+	positive cone of the C*-algebra M
M_*	predual of a W*-algebra M
M^{sa}	self-adjoint part of a C*-algebra
M_n	C*-algebra of all $n \times n$-matrices
AC	absolutely continuous functions
BV	functions of bounded variation
K	compact topological space
X	locally compact topological space
$C(K)$, $C(K, E)$	continuous functions (with values in E)
$C_c(X)$	continuous functions with compact support
$C_0(X)$	continuous functions vanishing in infinity
$C^b(X)$	bounded continuous functions
$C_{ru}(X)$	uniformly continuous functions
C^n, $C^{(n)}$	continuous differentiable functions (n-times)
$C_c^\infty(\mathbb{R}^n)$	infinitely differentiable functions with compact support
$L^p(\mu)$	p-integrable functions

$S(\mathbb{R}^n)$	Schwartz space
$M(X)$	regular Borel measures
$M_b(X)$	bounded regular Borel measures
$\mathcal{T} = (T(t))_{t\geqslant 0}$	(one-parameter) semigroup
$T_{\vert}$	subspace (reduced) semigroup
$T_{/}$	quotient semigroup
$\mathrm{Fix}\,(\mathcal{T})$	fixed space of $\mathcal{T}$
A	generator of a C_0-semigroup
A'	adjoint operator of A
A^*	adjoint generator
$\sigma(A)$	spectrum of A
$\varrho(A)$	resolvent set of A
$\sigma_{ess}(A)$	essential spectrum of A
$\sigma_b(A)$	boundary spectrum of A
$P_\sigma(A)$	point spectrum of A
$P_{\sigma_b}(A)$	boundary point spectrum
$A_0(A)$	approximate point spectrum of A
$R_\sigma(A)$	residual spectrum ç
$\omega; \omega(A); \omega(\mathcal{T}); \omega(T(t))$	growth bound
$s(A)$	spectral bound
$\omega_I(A)$	growth bound of the solution of the (ACP)
$\omega(f)$	growth bound of $T(\cdot)f$
$r(A)$	spectral radius of A
$\omega_{ess}(A)$	essential growth bound of A
$r_{ess}(T)$	essential spectral radius of A
$R(\lambda, A)$	resolvent operator of A
I^d, $\{I^d\}^{dd}_{d=1}$	orthogonal band of I (of I^d)
$\wedge$	infimum
$\vee$	supremum
$\vert T\vert$	modulus of a regular operator
$\hat{f}$, $\check{f}$	Fourier (inverse Fourier) transformation
$dp(f)$	subdifferential of p in f
$dN(f)$	subdifferential of the norm in f
$dN^+(f)$	subdifferential of the canonical half-norm in f
$\mathrm{im}(T)$	range of T
$\ker(T)$	null-space of T
$\mathrm{Im}\, z$	imaginary part of z
$\mathrm{Re}\, z$	real part of z
Re(f), Im(f)	see C-I, 7
Re T, Im T	see C-I, 7
$\bar{f}$	complex conjugate of f
S_f	signum operator with respect to f
$\mathrm{sign}(f)$	signum of f see C-II, 2.2
$f^{[n]}$	see B-III,2.2 ; C-III,2.1
$\vert f\vert$	absolute value of f

f^+	positive part of f
f^-	negative part of f
Id	identity operator
M_p	multiplication operator
$\mathbb{1}$	function identically 1
$\mathbb{1}_B$	characteristic function of the set XB
δ_x	Dirac measure in x
tr	trace
span M	linear subspace generated by M
$S(\alpha)$	sector in the complex plane
(ACP)	abstract Cauchy problem
(P)	positive minimum principle
(P')	see B-II,1.21
(K)	Kato's (equality) inequality
(RCP)	retarded Cauchy problem
(RE)	retarded equation
(T)	translation property