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LIST OF SYMBOLS

$A_{\Im}$	imaginary part of the operator A, 135, 146
$A_{\Re}$	real part of the operator A, 146
A^*	(Hilbert space) adjoint of the operator A, 291
A'	conjugate of the operator A, 292
$\overline{A}$	minimal closed linear extension of the operator A, 289
$A\|N$	restriction of A to the subspace of N, 8, 326
$A \geq 0$	non-negative operator A, 82
$AC_n(J)$	a space of functions on the interval J, 295
$A(X \to Y)$	operator A with domain in X and range in Y, 288
$\mathbf{C}$	field of complex numbers, 5
$\mathbf{C}^n$	complex Euclidean n-space
$\mathbf{C}_\infty$	the extended complex plane, 49
$C([a,b])$	the space of complex-valued continuous functions on $[a,b]$, 288
$C^k(\Omega)$	a set of differentiable functions on Ω, 310
$C^\infty(\Omega)$	the set of C^∞-functions on Ω, 310
$C_0^\infty(\Omega)$	the set of C^∞-functions with compact support in Ω, 310
$C^k(\overline{\Omega})$	a set of differentiable functions on $\overline{\Omega}$, 310
$\mathbf{D}$	open unit disk in the complex plane
$\mathcal{D}(A)$	domain of the operator A, 288
D^α	elementary differential operator, 310
$d(A)$	codimension of the range of A, 184
$\partial\Omega$	boundary of the open set Ω, 315
$det\ A$	determinant of an operator matrix A, 194
$\det(I+A)$	determinant of $I+A$ with A a trace class operator, 117
$\dim M$	dimension of the linear space M
E_A	a space spanned by eigenvectors and generalized eigenvectors, 31
$E(t)$	orthogonal projection in a resolution of the identity, 72
$\mathcal{F}(A)$	a family of analytic functions associated with a bounded operator A, 13
$\mathcal{F}_\infty(A)$	a family of analytic functions associated with an unbounded operator A, 323
$G(A)$	graph of the operator A, 289
$H_m(\Omega)$	Sobolev space of order m, 313
$H_m^0(\Omega)$	closure of $C_0^\infty(\Omega)$ in $H_m(\Omega)$, 313
I	identity operator, 5
I_X	identity operator on X, 5
$\Im\lambda$	the imaginary part of the complex number λ
$\operatorname{Im} A$	range (image) of the operator A
$\operatorname{ind}(A)$	index of the operator A, 184
$\mathcal{K}(X)$	the set of compact operators on the Banach space X, 191
$\kappa(\Gamma;0)$	winding number, 226

$\operatorname{Ker} A$	null space of A
$L_2^m([a,b])$	Lebesgue space of $\mathbf{C}^m$-valued functions, 148
$\mathcal{L}(X)$	Banach space of all bounded linear operators on X, 5
$\mathcal{L}(X,Y)$	Banach space of all bounded linear operators from X into Y, 5
$\lambda_j(A)$	j-th eigenvalue of the compact operator A, 30
$m(\lambda_0, A)$	algebraic multiplicity, 26
$m(\lambda_0, W(\cdot))$	algebraic multiplicity of an operator function, 205
$m(\Gamma, W(\cdot))$	algebraic multiplicity relative to a contour Γ, 205
$n(A)$	dimension of the null space of A, 184
$\nu(A)$	number of non-zero singular values of A, 96
$P_\sigma(A)$	Riesz projection, 9
$\Re\lambda$	real part of the complex number λ
$\mathbf{R}^n$	real Euclidean n-space
$\mathcal{R}_\infty^{m\times m}(\mathbf{R})$	a set of rational $m \times m$ matrix functions, 232
$\operatorname{rank} A$	rank of the operator A
$\rho(A)$	resolvent set of the operator A, 5
$\rho(G, A)$	resolvent set of the pencil $\lambda G - A$, 49
S_1	the trace class operators, 105
S_2	the Hilbert-Schmidt operators, 143
$s_j(A)$	j-th singular value of the operator A, 96, 212
$\sigma(A)$	spectrum of the operator A, 5
$\sigma(G, A)$	spectrum of the operator pencil $\lambda G - A$, 49
$\sigma_{\text{ess}}(A)$	essential spectrum of the operator A, 191, 373
$\mathbf{T}$	unit circle in the complex plane
$T_{\max,\tau,J}$	maximal operator, 295
$T_{\min,\tau,J}$	minimal operator, 300
$T_{R,J}$	a differential operator, 300
$\operatorname{tr} A$	trace of the operator A, 110
W_A	numerical range of A, 167
${}^\perp N$	inverse annihilator of N, 292
$S^\perp$	orthogonal complement of S; and also at times, annihilator of S, 292
$(x_1, \ldots, x_n)^T$	transpose of the row vector $(x_1, \ldots, x_n)$
$\langle \cdot, \cdot \rangle$	inner product
$\|A\|_1$	trace class norm of A, 106
$\|A\|_2$	Hilbert-Schmidt norm of A, 143
$\emptyset$	empty set

SUBJECT INDEX