

Index of Symbols

Latin

$A^{1/2}$ root of matrix A ... 302, 337
 A_J 153
 B_a^r ball with center a and
 radius r 94
 $c(A)$ condition number 103
 C^* dual cone 41
 $\text{cone}(A)$ conic hull 41
 $\text{conv}(A)$ convex hull of set A .. 82
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 $\text{Diag}(x)$ 248, 309
 e vector of ones 159, 248
 e_n n -th standard unit vector .304
 $\text{epi}(p)$ epigraph 75, 82
 $\text{ext}(C)$ extreme points 343
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 I, I_n identity matrix in \mathbb{M}_n
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 L^T transpose of matrix L
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lhs left-hand side
log natural logarithm
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 $\text{rank}(A)$ rank of matrix A
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 R_c, R_d, r_p residuals 333
rhs right-hand side
 $S(J)$ set of components of J .. 152
 S^n, S_+^n, S_{++}^n 301
sgn signum
 $\text{sup}(D)$ 69
 $\text{svec}(A)$ 301
 T_k CHEBYSHEV polynomial .. 127

$\text{trace}(A)$ trace of matrix A
UB unit ball 94
 $v(D)$ optimal value to (D) 69, 244
 $v(P)$ optimal value to (P)
 39, 68, 244
vec 310
 $\text{vol}(\mathcal{E})$ volume of ellipsoid \mathcal{E} 95, 318
 $X := \text{Diag}(x)$ 248
 (x^+, y^+, s^+) 261
 x_J vector with corresponding
 components 153
 xs entry-wise product of vectors,
 HADAMARD product 248

Bold

\mathbb{M}_n real (n, n) -matrices 132
 \mathbb{N} set of natural numbers
 = $\{1, 2, \dots\}$
 $\mathbb{N}_k := \{k, k + 1, \dots\}$ for integer k
 \mathbb{R} real field
 \mathbb{R}_+ nonnegative real numbers
 \mathbb{R}_{++} positive real numbers
 $\mathbb{R}^{n \times p}$ real (n, p) -matrices
 \mathbb{U}_p neighborhood system of p . 36

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\mathcal{A}^* adjoint operator 305
 $\mathcal{A}(x_0)$ active constraints 44
 $\mathcal{A}_+(x_0)$ 62
 $\mathcal{A}(X)$ 304
 \mathcal{C} central path 253
 \mathcal{E} equality constraints 15
 $\mathcal{E}(P, x_0)$ ellipsoid 94, 316
 \mathcal{F} feasible region 37, 39, 224, 365
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 or $(DSDP)$ 153, 243, 306
 \mathcal{F}_D effective domain of φ 67, 306

\mathcal{F}_D^0 set of strictly feasible points
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 \mathcal{F}_{D_e} set of feasible points
of (D_e) 244
 $\mathcal{F}_{D_e}^0$ set of strictly feasible points
of (D_e) 244
 $\mathcal{F}_D^{\text{opt}}$ set of optimizers of (D) . 256
 \mathcal{F}_P set of feasible points
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of (P) 244, 326
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 $\mathcal{F}_+(x_0)$ 62
 \mathcal{I} inequality constraints 15
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 $\mathcal{N}(A)$ nullspace of A
 $\mathcal{N}_2(\beta)$ neighborhood 267
 $\mathcal{N}'_2(\beta)$ neighborhood 269, 297
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 $\mathcal{N}'_{-\infty}(\gamma)$ neighborhood .. 269, 297
 $\mathcal{R}(A)$ rangespace of A
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ω_n volume of the n -dimensional
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 $\mathcal{C}_{dd}(x_0)$ cone of descent directions
..... 45, 369
 $\mathcal{C}_{fd}(x_0)$ cone of feasible directions
..... 44
 $\mathcal{C}_\ell(x_0), \mathcal{C}_\ell(P, x_0)$ linearizing
cone 44, 370
 $\mathcal{C}_{\ell^+}(x_0)$ 64
 $\mathcal{C}_t(x_0)$ tangent cone 49, 369
 $\mathcal{C}_t(M, x_0)$ tangent cone 49
 $\mathcal{C}_{t^+}(x_0)$ 62
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Norms and inner products

$\| \cdot \| := \| \cdot \|_2$ euclidean norm ... 39
 $\| \cdot \|_\infty$ maximum norm
 $\| \cdot \|_A$ 25, 102, 144
 $\| \cdot \|_F$ FROBENIUS norm . 132, 301
 $\| \cdot \|_W$ 132
 $\langle \cdot, \cdot \rangle$ inner product on \mathbb{R}^n 39
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Miscellaneous

$|S|$ cardinality of set S
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 \square end of proof
 \triangleleft end of example
 $\alpha_k \downarrow 0$: $\alpha_k > 0$ and $\alpha_k \rightarrow 0$
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 ∇f gradient of function f
 $\nabla^2 f$ Hessian of function f
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