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Texts in Applied Mathematics 26

Introduction to Mathematical Systems Theory

A Behavioral Approach

Springer

Notation

Symbol	Short description	Page
$\mathbb{R}_+$	set of nonnegative real numbers	8
$\mathbb{Z}_+$	set of nonnegative integers	15
$\mathbb{R}^{n_1 \times n_2}$	set of real $n_1 \times n_2$ matrices	21
$\mathbb{N}$	set of positive integers	29
$\mathbb{Z}$	set of integers	29
$\mathbb{Q}$	set of rational numbers	29
$\mathbb{R}$	set of real numbers	33
$\mathbb{C}$	set of complex numbers	33
$\mathbb{W}^{\mathbb{T}}$	set of functions $\mathbb{T} \to \mathbb{W}$	40
σ, σ^t	shift-operator	44
$\mathcal{C}^k(\mathbb{R}, \mathbb{R}^q)$	set of k times continuously differentiable functions	44
$\mathbb{R}[\xi]$	set of polynomials with real coefficients	70
$\mathbb{R}^{n_1 \times n_2}[\xi]$	set of real polynomial $n_1 \times n_2$ matrices	70
$\mathbb{R}^{\bullet \times n}[\xi]$	set of real polynomial matrices with n columns	147
$\mathcal{C}^\infty(\mathbb{R}, \mathbb{R}^q)$	set of infinitely differentiable functions	164
$\mathfrak{L}_1^{\mathrm{loc}}(\mathbb{R}, \mathbb{R}^q)$	set of locally integrable functions	168
$\phi * w$	convolution product	
deg	degree of polynomial	
det	determinant	
$P^{(k)}(\xi)$	kth formal derivative of polynomial	
$\binom{j}{\ell}$	Binomial coefficient	
Tr	trace	
$\mathfrak{C}$	controllabilty matrix	
im	image of linear map	

$\mathfrak{O}$	observability matrix	178
ker	kernel of linear map	179
$\chi_A(\xi)$	characteristic polynomial of the square matrix A	271
$\exp_s$	exponential function	283
$\mathfrak{L}_1(\mathbb{R}, \mathbb{R}^q)$	set of integrable functions	283
$\mathfrak{L}_2(\mathbb{R}, \mathbb{R}^q)$	set of square integrable functions	284
$\mathfrak{E}(s)$	exponential behavior	286
$\Sigma_{n,m}$	set of systems with m inputs and n states	319
$\Sigma_{n,m}^{\text{cont}}$	set of controllable systems with m inputs and n states	322
$\Sigma_{n,m,p}$	set of systems, n states, m inputs, and p outputs	344
$\mathfrak{L}_p(\mathbb{R}, \mathbb{R}^q)$		408
$\mathfrak{L}_\infty(\mathbb{R}, \mathbb{R}^q)$	set of bounded functions	408