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Nota di contenuto	Frontmatter -- Foreword -- Preface -- Contents -- 1. Introduction to fractional calculus and fractional-order control -- 2. Mathematical prerequisites -- 3. Definitions and computation algorithms of fractional-order derivatives and integrals -- 4. Solutions of linear fractional-order differential equations -- 5. Approximation of fractional-order operators -- 6. Modelling and analysis of multivariable fractional-order transfer function matrices -- 7. State space modelling and analysis of linear fractional-order systems -- 8. Numerical solutions of nonlinear fractional-order differential equations -- 9. Design of fractional-order PID controllers -- 10. Frequency domain controller design for multivariable fractional-order systems -- A. Inverse Laplace transforms involving fractional and irrational operations -- B. FOTF Toolbox functions and models -- C. Benchmark problems for the assessment of fractional-order differential equation algorithms -- Bibliography -- Index
Sommario/riassunto	This book explains the essentials of fractional calculus and demonstrates its application in control system modeling, analysis and design. It presents original research to find high-precision solutions to fractional-order differentiations and differential equations. Numerical algorithms and their implementations are proposed to analyze multivariable fractional-order control systems. Through high-quality

MATLAB programs, it provides engineers and applied mathematicians with theoretical and numerical tools to design control systems.

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