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4A: Understanding Delay in Digital Control; 4.4 Selecting the Sample Time; 4.5 Questions
Chapter 5 - The z-Domain 5.1 Introduction to the z-Domain; 5.2 z Phasors; 5.3 Aliasing; 5.4 Experiment 5A: Aliasing; 5.5 From Transfer Function to Algorithm; 5.6 Functions for Digital Systems; 5.7 Reducing the Calculation Delay; 5.8 Quantization; 5.9. Questions; Chapter 6 - Four Types of Controllers; 6.1 Tuning in this Chapter; 6.2 Using the Proportional Gain; 6.3 Using the Integral Gain; 6.4 Using the Differential Gain; 6.5 PD Control; 6.6 Choosing the Controller; 6.7 Experiments 6A-6D; 6.8 Questions; Chapter 7 - Disturbance Response; 7.1 Disturbances; 7.2 Disturbance Response of a Velocity Controller 7.3 Disturbance Decoupling 7.4 Questions; Chapter 8 - Feed-Forward; 8.1 Plant-Based Feed-Forward; 8.2 Feed-Forward and the Power Converter; 8.3 Delaying the Command Signal; 8.4 Variation in Plant and Power Converter Operation; 8.5 Feed-Forward for the Double-Integrating Plant; 8.6 Questions; Chapter 9 - Filters in Control Systems; 9.1 Filters in Control Systems; 9.2 Filter Passband; 9.3 Implementation of Filters; 9.4 Questions; Chapter 10 - Introduction to Observers in Control Systems; 10.1 Overview of Observers; 10.2 Experiments 10A-10C: Enhancing Stability with an Observer 10.3 Filter Form of the Luenberger Observer 10.4 Designing a Luenberger Observer; 10.5 Introduction to Tuning an Observer Compensator; 10.6 Questions; Section II - Modeling; Chapter 11 - Introduction to Modeling; 11.1 What is a Model?; 11.2 Frequency-Domain Modeling; 11.3 Time-Domain Modeling; 11.4 Questions; Chapter 12 - Nonlinear Behavior and Time Variation; 12.1 LTI Versus Non-LTI; 12.2 Non-LTI Behavior; 12.3 Dealing with Nonlinear Behavior; 12.4 Ten Examples of Nonlinear Behavior; 12.5 Questions; Chapter 13 - Model Development and Verification; 13.1 Seven-Step Process to Develop a Model 13.2 From Simulation to Deployment: RCP and HIL

Sommario/riassunto

Control Systems Design Guide has helped thousands of engineers to improve machine performance. This fourth edition of the practical guide has been updated with cutting-edge control design scenarios, models and simulations enabling apps from battlebots to solar collectors. This useful reference enhances coverage of practical applications via the inclusion of new control system models, troubleshooting tips, and expanded coverage of complex systems requirements, such as increased speed, precision and remote capabilities, bridging the gap between the complex, math-heavy control theory ta

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instruments; 3.1 SHORT-TERM RATES; 3.2 BONDS; 3.2.1 Bond pricing; 3.2.2 Duration; 3.2.3 Convexity; 3.3 CURRENCIES; 3.3.1 Introduction to the currencies spot market; 3.3.2 Spot quotations; FURTHER READING; 4 Equities and stock indexes; 4.1 STOCKS VALUATION 4.1.1 Discounted cash flows (DCF) method 4.1.2 The Gordon-Shapiro method; 4.1.3 The case of stocks not distributing dividends; 4.1.4 The real option method; 4.1.5 The book value method; 4.2 STOCK INDEXES; 4.3 THE PORTFOLIO THEORY; 4.3.1 Introduction to the Portfolio Theory; 4.3.2 Risk and return measures; 4.3.3 The Markowitz model; 4.3.4 Sharpe's CAPM; 4.3.5 The APT model (Roll and Ross); 4.3.6 CAPM versus APT; 4.3.7 The four-moments CAPM; FURTHER READING; 5 Forward instruments; 5.1 THE FORWARD FOREIGN EXCHANGE; 5.1.1 Forward exchange operations; 5.1.2 Forex (or FX) swaps 5.1.3 Forward forex swaps or forward-forward transactions 5.1.4 The NDF market; 5.2 FRAs; 5.2.1 Principle and calculation; 5.2.2 Example of application; 5.3 OTHER FORWARD CONTRACTS; 5.3.1 Forward contracts on equities; 5.3.2 Forward contracts on bonds; 5.4 CONTRACTS FOR DIFFERENCE (CFD); FURTHER READING; 6 Swaps; 6.1 DEFINITIONS AND FIRST EXAMPLES; 6.1.1 A first example of an IRS, on a debt (data from February 2002); 6.1.2 An example of CRS liability swap (data from February 2002); 6.1.3 Unwinding a swap; 6.2 PRIOR TO AN IRS SWAP PRICING METHOD; 6.3 PRICING OF AN IRS SWAP 6.4 (RE)VALUATION OF AN IRS SWAP 6.5 THE SWAP (RATES) MARKET; 6.6 PRICING OF A CRS SWAP; 6.7 PRICING OF SECOND-GENERATION SWAPS; 6.7.1 Zero-coupon swap; 6.7.2 EONIA and other basis swap; 6.7.3 In-arrear swap; 6.7.4 Constant maturity swap; 6.7.5 Quanto or diff swap; 6.7.6 Swapping other types of cash flows: performance swaps; FURTHER READING; 7 Futures; 7.1 INTRODUCTION TO FUTURES; 7.1.1 Margining system; 7.1.2 Settlement of the future contract at maturity; 7.2 FUTURES PRICING; 7.2.1 Theoretical price of a future; 7.2.2 Theoretical versus market future price; 7.2.3 The implied repo rate (IRR) 7.2.4 Future versus forward prices

Sommario/riassunto

The book aims to prioritise what needs mastering and presents the content in the most understandable, concise and pedagogical way illustrated by real market examples. Given the variety and the complexity of the materials the book covers, the author sorts through a vast array of topics in a subjective way, relying upon more than twenty years of experience as a market practitioner. The book only requires the reader to be knowledgeable in the basics of algebra and statistics. The Mathematical formulae are only fully proven when the proof brings some useful insight. These formulae are
