

## <<自动控制原理与设计>>

### 图书基本信息

书名：<<自动控制原理与设计>>

13位ISBN编号：9787115158536

10位ISBN编号：7115158533

出版时间：2007-7

出版时间：人民邮电出版社

作者：富兰克林

页数：609

字数：736000

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

## <<自动控制原理与设计>>

### 内容概要

本书是自动控制领域的名著，内容紧密围绕自动控制系统的分析与设计理论展开，主要介绍了自动控制的动态模型、动态响应、基本特性，着重介绍了自动控制的几种常规设计技术，还涉及了非线性系统的分析与设计，并穿插了许多自动控制在MATLAB下的仿真实例。

本书可作为高等院校自动控制及相关专业的高年级本科生和研究生的教材，还可供有关专业的教师、研究人员及从事自动控制相关工作的工程技术人员参考。

## <<自动控制原理与设计>>

### 作者简介

Gene F. Franklin，斯坦福大学电气工程系教授，国际著名控制学家，IEEE终身会士。他于1955年在哥伦比亚大学获得博士学位，曾任斯坦福大学电气工程系主任、IEEE控制系统学会理事、副主席，其研究领域覆盖了控制的各个方面。2005年因其对多个控制领域的基础性贡献而荣获美国自动

<<自动控制原理与设计>>

书籍目录

1 An Overview and Brief History of Feedback Control A Perspective on Feedback Control Chapter Overview  
 1.1 A Simple Feedback System 1.2 A First Analysis of Feedback 1.3 A Brief History 1.4 An Overview of the Book  
 Summary End-of-Chapter Questions Problems  
 2 Dynamic Models A Perspective on Dynamic Models  
 Chapter Overview 2.1 Dynamics of Mechanical Systems 2.2 Models of Electric Circuits 2.3 Models of  
 Electromechanical Systems 2.4 Heat and Fluid-Flow Models 2.5 Complex Mechanical Systems Summary  
 End-of-Chapter Questions Problems  
 3 Dynamic Response A Perspective on System Response Chapter  
 Overview 3.1 Review of Laplace Transforms 3.2 System Modeling Diagrams 3.3 Effect of Pole Locations 3.4  
 Time-Domain Specifications 3.5 Effects of Zeros and Additional Poles 3.6 Amplitude and Time Scaling 3.7  
 Stability 3.8 Obtaining Models from Experimental Data 3.9 Mason's Rule and the Signal-Flow Graph  
 Summary End-of-Chapter Questions Problems  
 4 Basic Properties of Feedback A Perspective on the Properties  
 of Feedback Chapter Overview 4.1 The Basic Equations of Control 4.2 Control of Steady-State Error: System  
 Type 4.3 Control of Dynamic Error: PID Control 4.4 Extensions to the Basic Feedback Concepts Summary  
 End-of-Chapter Questions Problems  
 5 The Root-Locus Design Method A Perspective on the Root-Locus  
 Design Method Chapter Overview 5.1 Root Locus of a Basic Feedback System 5.2 Guidelines for Sketching a  
 Root Locus 5.3 Selected Illustrative Root Loci 5.4 Selecting the Parameter Value 5.5 Design Using Dynamic  
 Compensation 5.6 A Design Example Using the Root Locus 5.7 Extensions of the Root-Locus Method  
 Summary End-of-Chapter Questions Problems  
 6 The Frequency-Response Design Method A Perspective on  
 the Frequency-Response Design Method Chapter Overview 6.1 Frequency Response 6.2 Neutral Stability 6.3  
 The Nyquist Stability Criterion 6.4 Stability Margins 6.5 Bode's Gain – Phase Relationship 6.6 Closed-Loop  
 Frequency Response 6.7 Compensation 6.8 Alternative Presentations of Data 6.9 Specifications in Terms of  
 the Sensitivity Function 6.10 Time Delay Summary End-of-Chapter Questions Problems  
 7 State-Space  
 Design A Perspective on State-Space Design Chapter Overview 7.1 Advantages of State Space 7.2 System  
 Description in State Space 7.3 Block Diagrams and State Space 7.4 Analysis of the State Equations 7.5  
 Control-Law Design for Full-State Feedback 7.6 Selection of Pole Locations for Good Design 7.7 Estimator  
 Design .....  
 8 Digital Control 9 Nonlinear Systems 10 Control System Design: Principles and Case Studies  
 Appendix A1 Laplace Transforms Appendix B A Review of Complex Variables Appendix C Summary of Matrix  
 Theory Appendix D Controllability and Observability Appendix E Ackermann's Formula for Pole Placement  
 Appendix F MATLAB Commands Appendix G Solutions to the End-of-Chapter Questions References Index

<<自动控制原理与设计>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>