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Sommario/riassunto	"The vast majority of automatic controllers used to compensate industrial processes are of PI or PID type. This book comprehensively compiles, using a unified notation, tuning rules for these controllers proposed over the last seven decades (1935–2005). The tuning rules are carefully categorized and application information about each rule is given. The book discusses controller architecture and process modeling issues, as well as the performance and robustness of loops compensated with PI or PID controllers. This unique publication brings together in an easy-to-use format material previously published in a large number of papers and books. This wholly revised second edition extends the presentation of PI and PID controller tuning rules, for single variable processes with time delays, to include additional rules compiled since the first edition was published in 2003."

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Autore	Wang Liuping
Titolo	PID control system design and automatic tuning using MATLAB/Simulink // Liuping Wang
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Descrizione fisica	1 online resource (369 pages)
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## Sommario/riassunto

Covers PID control systems from the very basics to the advanced topics This book covers the design, implementation and automatic tuning of PID control systems with operational constraints. It provides students, researchers, and industrial practitioners with everything they need to know about PID control systems'from classical tuning rules and model-based design to constraints, automatic tuning, cascade control, and gain scheduled control.' PID Control System Design and Automatic

Tuning using MATLAB/Simulink introduces PID control system structures, sensitivity analysis, PID control design, implementation with constraints, disturbance observer-based PID control, gain scheduled PID control systems, cascade PID control systems, PID control design for complex systems, automatic tuning and applications of PID control to unmanned aerial vehicles. It also presents resonant control systems relevant to many engineering applications. The implementation of PID control and resonant control highlights how to deal with operational constraints. Provides unique coverage of PID Control of unmanned aerial vehicles (UAVs), including mathematical models of multi-rotor UAVs, control strategies of UAVs, and automatic tuning of PID controllers for UAVs -Provides detailed descriptions of automatic tuning of PID control systems, including relay feedback control systems, frequency response estimation, Monte-Carlo simulation studies, PID controller design using frequency domain information, and MATLAB/Simulink simulation and implementation programs for automatic tuning -Includes 15 MATLAB/Simulink tutorials, in a step-by-step manner, to illustrate the design, simulation, implementation and automatic tuning of PID control systems -Assists lecturers, teaching assistants, students, and other readers to learn PID control with constraints and apply the control theory to various areas. - Accompanying website includes lecture slides and MATLAB/ Simulink programs PID Control System Design and Automatic Tuning using MATLAB/Simulink is intended for undergraduate electrical, chemical, mechanical, and aerospace engineering students, and will greatly benefit postgraduate students, researchers, and industrial personnel who work with control systems and their applications. '

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