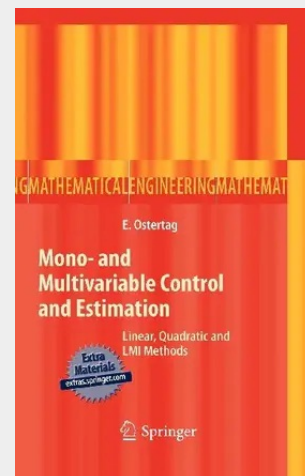


Mono- and Multivariable Control and Estimation

Linear, Quadratic and LMI Methods

This book presents the various design methods of a state-feedback control law and of an observer. The considered systems are of continuous-time and of discrete-time nature, monovariable or multivariable, the last ones being of main consideration. Three different approaches are described: • Linear design methods, with an emphasis on decoupling strategies, and a general formula for multivariable controller or observer design; • Quadratic optimization methods: Linear Quadratic Control (LQC), optimal Kalman filtering, Linear Quadratic Gaussian (LQG) control; • Linear matrix inequalities (LMIs) to solve linear and quadratic problems. The duality between control and observation is taken to advantage and extended up to the mathematical domain. A large number of exercises, all given with their detailed solutions, mostly obtained with MATLAB, reinforce and exemplify the practical orientation of this book. The programs, created by the author for their solving, are available on the Internet sites of Springer and of MathWorks for downloading. This book is targeted at students of Engineering Schools or Universities, at the Master's level, at engineers desiring to design and implement innovative control methods, and at researchers.

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