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Collana	Advances in design and control
Altri autori (Persone)	BieglerLorenz T CampbellS. L (Stephen La Vern) MehrmannV. L <1955-> (Volker Ludwig)
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Nota di contenuto	1. DAEs, control, and optimization -- 2. Regularization of linear and nonlinear descriptor systems -- 3. Notes on linearization of DAEs and on optimization with differential-algebraic constraints -- 4. Spectra and leading directions for linear DAEs -- 5. StratiGraph tool : matrix stratifications in control applications -- 6. Descriptor system techniques in solving H2-optimal fault detection and isolation problems -- 7. Normal forms, high-gain, and funnel control for linear differential-algebraic systems -- 8. Linear-quadratic optimal control problems with switch points and a small parameter -- 9. Mixed-integer DAE optimal control problems : necessary conditions and bounds -- 10. Optimal control of a delay PDE -- 11. Direct transcription with moving finite elements -- 12. Solving parameter estimation problems with SOCX -- 13. Control of integrated chemical process systems using underlying DAE models -- 14. DMPC for building temperature regulation -- 15. Dynamic regularization, level set shape optimization, and computed myography -- 16. The application of Pontryagin's minimum principle for endpoint optimization of batch processes.

Sommario/riassunto

Differential-algebraic equations are the most natural way to mathematically model many complex systems in science and engineering. Once the model is derived, it is important to optimize the design parameters and control it in the most robust and efficient way to maximize performance. This book presents the latest theory and numerical methods for the optimal control of differential-algebraic equations. The following features are presented in a readable fashion so the results are accessible to the widest audience: the most recent theory, written by leading experts from a number of academic and nonacademic areas and departments; several state-of-the-art numerical methods; and real-world applications.
