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Control of Switching Systems by Invariance Analysis: Application to Power Electronics: Application to Power Electronics (Hardback)

By Laurent Fribourg, Romain Soulat

ISTE Ltd and John Wiley Sons Inc, United Kingdom, 2013. Hardback. Condition: New. Language: English . Brand New Book. This book presents correct-by-design control techniques for switching systems, using different methods of stability analysis. Switching systems are increasingly used in the electronics and mechanical industries; in power electronics and the automotive industry, for example. This is due to their flexibility and simplicity in accurately controlling industrial mechanisms. By adopting appropriate control rules, we can steer a switching system to a region centered at a desired equilibrium point, while avoiding unsafe regions of parameter saturation. The authors explain various correct-by-design methods for control synthesis, using different methods of stability and invariance analysis. They also provide several applications of these methods to industrial examples of power electronics. Contents 1. Control Theory: Basic Concepts. 2. Sampled Switched Systems. 3. Safety Controllers. 4. Stability Controllers. 5. Application to Multilevel Converters. 6. Other Issues: Reachability, Sensitivity, Robustness and Nonlinearity. About the Authors Laurent Fribourg is head of the LSV (Laboratoire Specification et Verification) and Scientific Coordinator of the Institut Farman, Institut Federatif de Recherche CNRS, which brings together the expertise of five laboratories from ENS Cachan, in France, in the fields of modeling, simulation and...



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