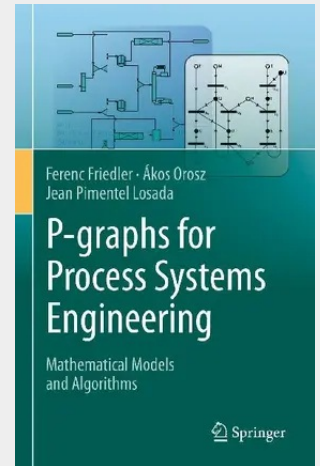


P-graphs for Process Systems Engineering

Mathematical Models and Algorithms

This book discusses the P-graph framework for developing and understanding effective design tools for process systems engineering, and addresses the current state of its theory and applications. The book details the new philosophy of the axioms-based mathematical modelling of processing systems, the basic algorithms, areas of application, future directions, and the proofs of theorems and algorithms. Because of the rigorous foundation of the theory, the framework provides a firm basis for future research in mathematical modelling, optimization, and design of complex engineering systems. The various P-graph applications discussed include process network synthesis, reliability engineering, and systems resilience. The framework opens new avenues for research in complex systems including redundant operations for critical infrastructure, systems sustainability, and modelling tools for disaster engineering. Demonstration software is provided to facilitate the understanding of the theory. The book will be of interest to institutions, companies, and individuals performing research and R&D in process systems engineering.

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