

Advances in Metaheuristic Algorithms for Optimal Design of Structures

By A. Kaveh



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This book presents efficient metaheuristic algorithms for optimal design of structures. Many of these algorithms are developed by the author and his colleagues, consisting of Democratic Particle Swarm Optimization, Charged System Search, Magnetic Charged System Search, Field of Forces Optimization, Dolphin Echolocation Optimization, Colliding Bodies Optimization, Ray Optimization. These are presented together with algorithms which were developed by other authors and have been successfully applied to various optimization problems. These consist of Particle Swarm Optimization, Big Bang-Big Crunch Algorithm, Cuckoo Search Optimization, Imperialist Competitive Algorithm, and Chaos Embedded Metaheuristic Algorithms. Finally a multi-objective optimization method is presented to solve large-scale structural problems based on the Charged System Search algorithm.

The concepts and algorithms presented in this book are not only applicable to optimization of skeletal structures and finite element models, but can equally be utilized for optimal design of other systems such as hydraulic and electrical networks.



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Published on: 2014-04-28Released on: 2014-04-28Format: Kindle eBook

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Editorial Review

Review

"It contains a large amount of precisely selected topics covering various aspects and design techniques related to efficient metaheuristic algorithms for optimal design of structures. It provides an in-depth overview of the main methods used in the field. ... Besides being very useful to those who are interested in optimal design of structures and applying various metaheuristics to solve underlying optimization problems, involved reader can also benefit from the easy way it presents various ideas and approaches to problem solutions." (Vladimír Lacko, zbMATH 1333.90002, 2016)

From the Back Cover

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