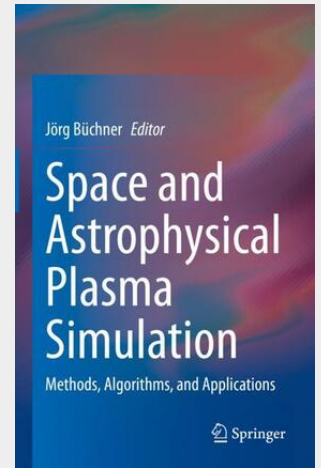Büchner

Space and Astrophysical Plasma Simulation

Methods, Algorithms, and Applications

This book is a collection of contributions covering the major subjects in numerical simulation of space and astrophysical plasma. It introduces the different approaches and methods to model plasma, the necessary computational codes, and applications in the field. The book is rooted in the previous work Space Plasma Simulation (Springer, 2003) and includes the latest developments. It is divided into three parts and all chapters start with an introduction motivating the topic and its use in research and ends with a discussion of its applications. The chapters of the first part contain tutorials of the different basic approaches needed to perform space plasma simulations. This part is particularly useful for graduate students to master the subject. The second part presents more advanced materials for students and researchers who already work with pre-existing codes but want to implement the recent progresses made in the field. The last part of the bookdiscusses developments in the area for researchers who are actively working on advanced simulation approaches like higher order schemes and artificial intelligence, agent-based technologies for multiscale and multi-dimensional systems, which represent the recent innovative contributions made in space plasma research.

This book is a collection of contributions covering the major subjects in numerical simulation of space and astrophysical plasma. It introduces the different approaches and methods to model plasma, the necessary computational codes, and applications in the field. The book is rooted in the previous work Space Plasma Simulation (Springer, 2003) and includes the latest developments. It is divided into three parts and all chapters start with an introduction motivating the topic and its use in research and ends with a discussion of its applications. The chapters of the first part contain tutorials of the different basic approaches needed to perform space plasma simulations. This part is particularly useful for graduate students to master the subject. The second part presents more advanced materials for students and researchers who already work with pre-existing codes but want to implement the recent progresses made in the field. The last part of the book discusses developments in the area for researchers who are actively working on advanced simulation approaches like higher order schemes and artificial intelligence, agent-based technologies for multiscale and multi-dimensional systems, which represent the recent innovative contributions made in space plasma research.

171,19 €
159,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783031118692
Medium: Buch
ISBN: 978-3-031-11869-2
Verlag: Springer International Publishing
Erscheinungstermin: 02.03.2023
Sprache(n): Englisch
Auflage: 2023
Produktform: Gebunden
Gewicht: 828 g
Seiten: 426
Format (B x H): 160 x 241 mm