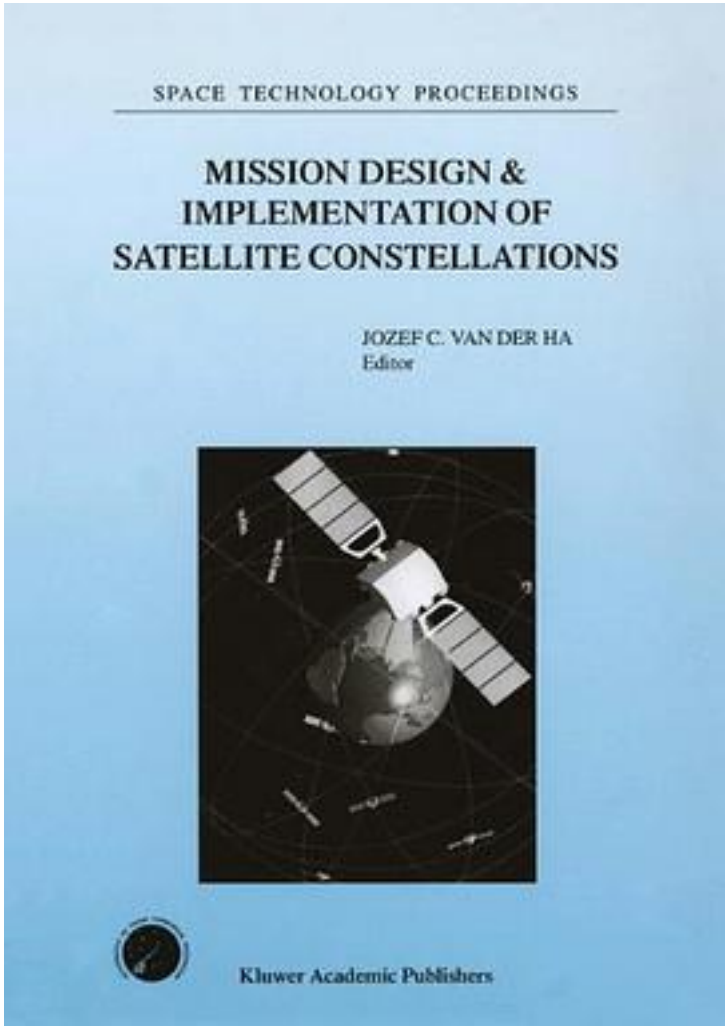
Mission Design and Implementation of Satellite Constellations



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This volume of proceedings contains papers presented at an international Workshop entitled Mission Design and Implementation of Satellite Constellations in Toulouse, France, in November 1997. This Workshop represented the first international gathering of specialists in this currently very active field of research. The rise of satellite constellations during the last few years is undoubtedly the most important and most exciting development in the satellite commercial domain since the beginning of GEO (geostationary earth orbit) communication services in the early 60s. A total of 37 papers are presented on topics covering constellation mission design, mission analysis and simulation, orbit selection, constellation deployment, maintenance, services and operations. The papers compiled in this volume are of strong topical appeal in view of the present rapid evolution of satellite constellation applications in the fields of telecommunications, navigation, and earth observation. Real-world applications that are addressed include voice and data communications, navigation, and data relay services as well as earth observations. Specific studies and experiences are provided on many actual constellation projects for telephone, data messaging, and broad-band data communications services such as Iridium, Orbcomm, Skybridge, Celestri, Teledesic, among others. Constellations for navigation services (for instance the Global Navigation Satellite System or GNSS) and for earth observation applications (for instance SkyMed/Cosmo) are also addressed. Finally, collision and orbital debris risk issues associated with satellite constellations as well as the proposed mitigation measures receive notable attention. The unique and novel characteristics of satellite constellation systems have not only rejuvenated satellite system design but have also brought new life to classical flight dynamics disciplines such as orbital mechanics, station-acquisition and station-keeping concepts: all of these aspects are addressed in detail in this volume of proceedings. The book will be of considerable interest to both engineers and managers who are active in the design and implementation of satellite constellation projects. Even a non-specialist reader with a fascination for recent technological developments may profit from reading this book. The reader will find a large number of stimulating ideas and interesting results which will enable him to achieve a good understanding of the issues pertinent to an effective design and implementation of satellite constellations and to the implementation of the associated real-world services.

作者介绍:

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