

Shusen Tan

GNSS

Systems and Engineering

The Chinese Beidou Navigation
and Position Location Satellite



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Systems and Engineering

The Chinese Beidou Navigation and Position Location Satellite

Shusen Tan, *Beijing Satellite Navigation Center, China*

This book provides a comprehensive and extensive description of the Beidou global navigation and positioning satellite system. Readers are first introduced to the fundamental and theoretical knowledge of a radio positioning satellite system, including fundamental concepts, basic principles, engineering design, integrity and security, and user equipment technology. The author then presents the design guidelines for radio navigation satellite systems, including performance requirements, system design, operation control system design, satellite navigation payload design, user equipment design, application examples, and performance testing. The book provides a unique perspective on the Beidou system.

- Highlights the technical features and broad application prospects of navigation, positioning and short message communication of the Beidou satellite system
- Enhances understanding of the fundamentals and theories of radio navigation and positioning satellite systems
- Offers practical guidelines on the design and construction of satellite systems

GNSS Systems and Engineering: The Chinese Beidou Navigation and Position Location Satellite is a valuable reference text written by a senior engineer. It is intended for graduate students, researchers and engineers working on navigation and positioning satellite systems.




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GNSS Systems and Engineering

Preface

The contemporary satellite navigation system has become an important infrastructure in the main developed countries. The US Global Positioning System (GPS) and the Russian Global Navigation Satellite System (GLONASS), established in the middle 1990s, are not only important military equipment but also widely used in the fields of global navigation and positioning, high precision time transfer, spacecraft tracking telemetry and control, and so on. The European Union started building the Galileo Satellite Navigation System at the end of the twentieth century. China has started building the China Compass Navigation Satellite System since the mid-1990s. The Compass Satellite Navigation and Positioning Reporting System was successfully built on December 27, 2012, realizing the service capability in Asia-Pacific Region. The author, starting from the Compass Satellite Navigation and Positioning Reporting System and engineering practice and taking the Radio Determination Satellite System (RDSS) and Radio Navigation Satellite Service (RNSS) as the important content, wrote *GNSS Systems and Engineering: The China Compass Navigation and Position Location Satellite*.

This book consists of three parts, 15 chapters in total. The first part includes four chapters introducing the theory and engineering design of Radio Determination Satellite Service (RDSS) mainly including basic concepts, fundamental principle, engineering design, user equipment technology, and so on. Chapter 5, Theory and Engineering Design of Navigation and Determination Satellite Service, serves as a link between the previous and following chapters introducing the theory and design of Radio Navigation and Determination Satellite Service integrating RDSS and RNSS. The third part includes the next nine chapters that introduce the theory and engineering design of Radio Navigation Satellite Service (RNSS), mainly including basic concepts, fundamental principle, engineering design, application examples, user equipment testing, and so on.

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