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Navigation: Science and Technology

Physics : Space Sciences (including Extraterrestrial Physics, Space Exploration and
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Zheng, Wei, Wang, Yidi

X-ray Pulsar-based Navigation

Theory and Applications

- Introduces not only the basic concept of X-ray pulsar-based navigation, but also specific application methods
- Covers virtually every aspect of X-ray pulsar-based navigation and offers readers a complete picture of X-ray pulsar-based navigation
- Provides ideas for how to realize X-ray pulsar-based navigation and to enhance its positioning accuracy, including aspects like the on-orbit processing pulsar signal, handling pulsar timing noise, and compensating for various systematic biases

This book discusses autonomous spacecraft navigation based on X-ray pulsars, analyzing how to process X-ray pulsar signals, how to simulate them, and how to estimate the pulse's time of arrival based on epoch folding. In turn, the book presents a range of X-ray pulsar-based spacecraft positioning/time-keeping/attitude determination methods. It also describes the error transmission mechanism of the X-ray pulsar-based navigation system and its corresponding compensation methods. Further, the book introduces readers to navigation based on multiple measurement information fusion, such as X-ray pulsar/traditional celestial body integrated navigation and X-ray pulsar/INS integrated navigation. As such, it offers readers extensive information on both the theory and applications of X-ray pulsar-based navigation, and reflects the latest developments in China and abroad.

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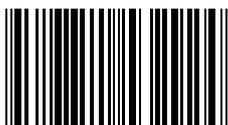
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