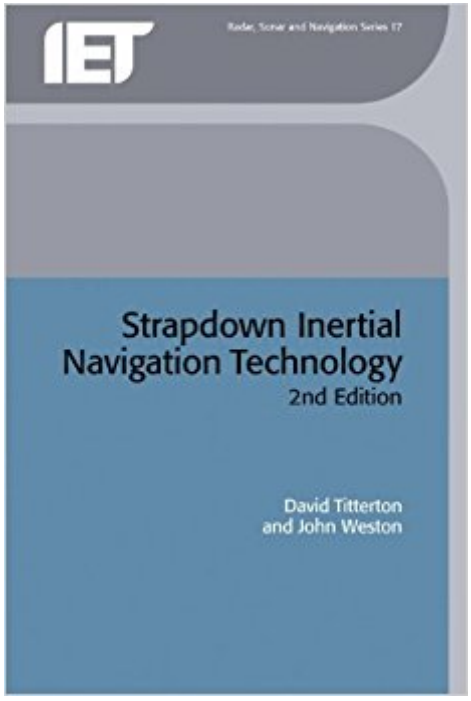
Strapdown Inertial Navigation Technology (IEE Radar, Sonar, Navigation And Avionics Series)



Synopsis

Inertial navigation is widely used for the guidance of aircraft, missiles ships and land vehicles, as well as in a number of novel applications such as surveying underground pipelines in drilling operations. This book discusses the physical principles of inertial navigation, the associated growth of errors and their compensation. It draws current technological developments, provides an indication of potential future trends and covers a broad range of applications. New chapters on MEMS (microelectromechanical systems) technology and inertial system applications are included.

Book Information

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Customer Reviews

David Titterton is currently the technical leader of laser systems at the Defence Science and Technology Laboratory (Dstl), part of the UK Ministry of Defence (MoD). He is a member of the Dstl College of Fellows (individual merit scientists), and is a visiting professor at the University of Cranfield.John Weston is a Principal Scientist at Halliburton Sperry-Sun researching inertial/gyroscopic systems for the surveying of underground pipelines and well bores. He has worked in missile guidance and control, originally with British Aerospace plc. He received a BSc in Electrical Engineering and an MSc in Systems Engineering.

An excellent text that has helped me work through some challenges with a legacy inertial navigation system in one of our underwater systems and provided a better overall understanding of the topic

area, including advances in inertial sensor technology.

This book has the most comprehensive breakdown and analysis of the principles and modeling of accelerometer and gyro technologies I've seen in a book yet, though there are already some very good books on stable platform products. There's also a wealth of information on various coordinate systems used in the vicinity of Earth. While an entire chapter is devoted to MEMS, it would seem that the mechanization material (as well as alignment) is geared towards higher-end devices, in that many MEMS units I've encountered cannot readily identify any component of Earth's rotation, making much of the math superfluous for my application. There is a chapter near the end that deals briefly with aiding, but don't count on that being enough. A number of real-world periodic motions, both short-term (coning, sculling) and long-term (Schuler, Foucault), are identified, and the references to literature at the end of each section are invaluable in digging deeper. Kalman filtering is relegated to an appendix, but that is fine, as this book is significantly more oriented to applications; pick up a copy of Gelb if you need an intro to estimation.

Despite covering a wide range of complex subjects, the explanations in this book are clear. This book played a key role in my understanding of INS systems, and I highly recommend it to others.

A good introduction from the ground up. Concepts were easily conveyed to the reader. I'm much more comfortable with strapdown systems after reading this book.

Strapdown Inertial Nav. is an excellent book for those who would like to understand the technology or learn how to process inertial sensor data.

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