Strapdown Inertial Navigation Technology, Second Edition

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The book provides an up-to-date guide to the techniques and applications of inertial navigation for use by both practicing engineers and post-graduate students. The book satisfies a need for a book on the subject of inertial navigation that provides both an introduction to the techniques involved as well as information on modern technological developments, combined with a more rigorous mathematical treatment for the reader wishing to explore the subject in greater depth.

The text describes the basic concepts of inertial navigation with particular emphasis on modern strapdown system technology, providing detailed information on system mechanizations, instrumentation and computational aspects, design analysis, and applications of such systems. In particular, the text provides up-to-date information on inertial sensor technology and inertial navigation system computational techniques, bringing together the broad experience of the authors within a single volume. The text contains both descriptive passages and also mathematical details where appropriate.

MEMS is the focus of much research and development activity at the present time; this technology offers rugged and reliable sensors with a performance capability that lends itself to integration with satellite navigation systems.

This second edition has been updated in a number of areas to reflect ongoing developments in the field of inertial navigation technology. In addition to a number of refinements covering sensor technology, geodesy, and error modeling, the major additions to the original text are new chapters on MEMS (micro electro-mechanical systems) technology and system applications. A broad range of applications are addressed in a second new chapter, covering ship's inertial navigation, tactical missiles, well bore surveying systems, automobiles, and sightline stabilization systems, to name but a few.

Preface