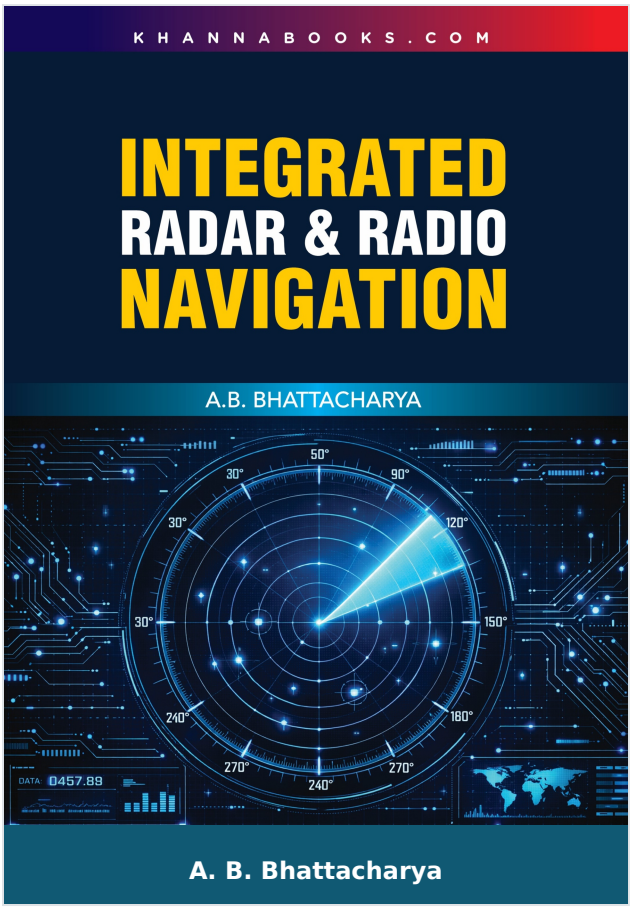

Integrated Radar & Radio Navigation

Author :	A. B. Bhattacharya
ISBN 13 :	978-93-77083-87-8
ISBN 10 :	9377083877
E-ISBN 13 :	978-93-77083-87-8
Edition :	First
Pages :	408
Type of book :	Physical
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 695.00
Categories :	New Arrivals, Electrical, Electronics & Communication Engineering, Book Store
Condition Type :	New
Country Origin :	India

Product Description

Integrated Radar and Radio Navigation: From Classroom Fundamentals to Industry Frontiers by Prof. A.B. Bhattacharya is a comprehensive guide designed to bridge the gap between academic theory and modern industrial application. The text provides a unified exploration of radar systems, satellite-based GNSS, and ground-based radio aids, offering a holistic view of modern navigation architecture. It is specifically tailored for students in electronics, communication, and aviation engineering, as well as professionals seeking to align with global standards like ICAO and IMO.

The book moves beyond traditional pedagogy by integrating AI-enabled autonomous platforms and quantum navigation concepts. With a focus on practical mastery, it features numerous numerical problems, MCQs, and real-world project ideas. This blend of foundational electromagnetic principles and cutting-edge technological trends ensures readers are well-equipped for the evolving demands of the aerospace and maritime sectors.

Salient Features

• Unified Navigation Architecture: Explores the integration of radar, radio aids, and GNSS to ensure high-integrity positioning for modern maritime and aviation operations.

• Global Standard Alignment: Content is meticulously mapped to international regulatory frameworks, including ICAO, IMO, and IEEE, ensuring industry-relevant professional knowledge.

• Practical Problem-Solving: Includes a robust collection of solved numericals, short-answer questions, and MCQs designed to reinforce core technical concepts and examination readiness.

• Project-Based Learning: Features innovative "Project Ideas" covering UAV navigation and collision avoidance, helping students translate theoretical knowledge into functional

Khanna Publishing House

4C/4344, Ansari Road, Daryaganj, New Delhi-110002

Email: contact@khannabooks.com | Tel: 011-2324 44 47 - 48 | Mobile: +91-99109 09320

engineering solutions.

• Advanced Radar Technologies: Provides in-depth coverage of Phased Array Radar, SAR, and AESA systems, essential for modern surveillance and remote sensing applications.

• Satellite Constellation Expertise: Offers detailed analysis of GPS, GLONASS, and Galileo systems, including signal processing, error correction, and differential augmentation techniques.

• Future-Ready Innovations: Addresses emerging frontiers such as Quantum Navigation and AI-driven sensor fusion, preparing readers for the next generation of autonomous systems.

• Multi-Domain Utility: Delivers versatile insights applicable across civil aviation, defense, maritime safety, and space exploration, making it a comprehensive reference for various sectors

Khanna Publishing House

4C/4344, Ansari Road, Daryaganj, New Delhi-110002

Email: contact@khannabooks.com | Tel: 011-2324 44 47 - 48 | Mobile: +91-99109 09320

Table Of Contents

- Preface
- Acknowledgement
- Introduction to Radar and Radio Navigation
- Fundamentals of Electromagnetic Waves
- Principles of Radar Systems
- advanced radar Technologies and Applications
- Principles of Radio Aids to Navigation
- Ground-Based Radio Navigation Systems
- Satellite-Based Navigation Systems
- Integrated Navigation Systems
- Airborne Radar and Navigation Systems
- Maritime Radar and Radio Navigation
- Navigation in Space and Remote Sensing Applications
- Trends, Challenges and Future Directions
- Appendices

Author

A. B. Bhattacharya

Prof. A. B. Bhattacharya did his MSc and PhD degree from the University of Calcutta in Physics and Post-doc from the Massachusetts Institute of Technology (MIT), Cambridge, USA. He worked in close collaboration with the leading laboratories like Lincoln Laboratory; Milestone Hill Observatory; Earth, Atmospheric and Planetary Sciences division of MIT and many other well recognized laboratories in India and abroad. He served as Professor & Head of the Department of Physics, University of Kalyani; Dean of

Khanna Publishing House

4C/4344, Ansari Road, Daryaganj, New Delhi-110002

Email: contact@khannabooks.com | Tel: 011-2324 44 47 - 48 | Mobile: +91-99109 09320

Research and Head of the ECE Department, Techno India University; Pro Vice Chancellor of JIS University and Director of Brainware University. He has published 32 text books for Science and Engineering students, two popular books for general readers and over 400 research articles in reputed International Journals. Under his supervision 24 scholars received their doctoral degree. He is a fellow of the Institute of Electronics and Telecommunication Engineers and member of many scientific organizations. India International Friendship Society awarded him the prestigious "Shiksha Ratna Award" and Certificate of Excellence for meritorious services, outstanding performance and significant contribution to education. The International Institute of Success Awareness hon0red him with their globally recognized "Glory of India Gold Medal" for his outstanding contribution to the national stature of India. A few words from the certificate issued by Prof. Williams of MIT may be quoted "Our collaborative effort was directed at the wavelength dependence of radar echoes observations with the Millstone Hill UHF radar in Westford. He made use of the Charles River Data System computer in the Weather Radar Laboratory for these calculations. His results help to make a convincing case that the volume reflectivity associated with lighting is a diminishing function of radar wavelength, contrary to contemporary thinking". Dr.

Khanna Publishing House

4C/4344, Ansari Road, Daryaganj, New Delhi-110002

Email: contact@khannabooks.com | Tel: 011-2324 44 47 - 48 | Mobile: +91-99109 09320