1. Record Nr. UNINA9910451237903321 Autore Bekir Esmat Titolo Introduction to modern navigation systems [[electronic resource] /] / **Esmat Bekir** New Jersey, : World Scientific, c2007 Pubbl/distr/stampa **ISBN** 1-281-91858-X 9786611918583 981-270-875-8 Descrizione fisica 1 online resource (256 p.) Disciplina 623.893 629.04/5 629.045 Soggetti Inertial navigation systems Inertial navigation Global Positioning System Electronic books. Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Includes bibliographical references and index. Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Preface; Contents; Introduction; 1. Vectors and Matrices; 1.1 Introduction; 1.2 Vector Inner Product; 1.3 Vector Cross Products and Skew Symmetric Matrix Algebra: 2. Coordinate Transformation between Orthonormal Frames; 2.1 Introduction; 2.2 Direction Cosine Matrices; 2.3 The Direction Cosine Matrix is a Unitary Matrix; 2.4 The Direction Cosine Matrix is a Transformation Matrix; 2.5 DCM Fixed Axis; 2.6 The Rotation Matrix; 2.7 Inner and Outer Transformation Matrices; 2.8 The Quaternion; 3. Forms of the Transformation Matrix; 3.1 Introduction; 3.2 Simple Frame Rotations; 3.3 Euler Angles 3.4 Rotation Vector3.5 Quaternion; 3.6 Simple Quaternions; 3.7 Conversion between Forms; 3.7.1 Conversion between DCM and Euler; 3.7.2 Conversion between DCM and Quaternion; 3.7.3 Conversion between Euler Angles and Quaternion; 3.8 Dynamics of the

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The emerging technology of very inexpensive inertial sensors is available for navigation as never before. The book lays the analytical foundation for understanding and implementing the navigation equations. It starts by demystifying the central theme of the frame rotation using such algorithms as the quaternions, the rotation vector and the Euler angles. After developing navigation equations, the book introduces the computational issues and discusses the physical aspects that are tied to implementing these equations. The book then explains alignment techniques.Introduction to Modern Navigation