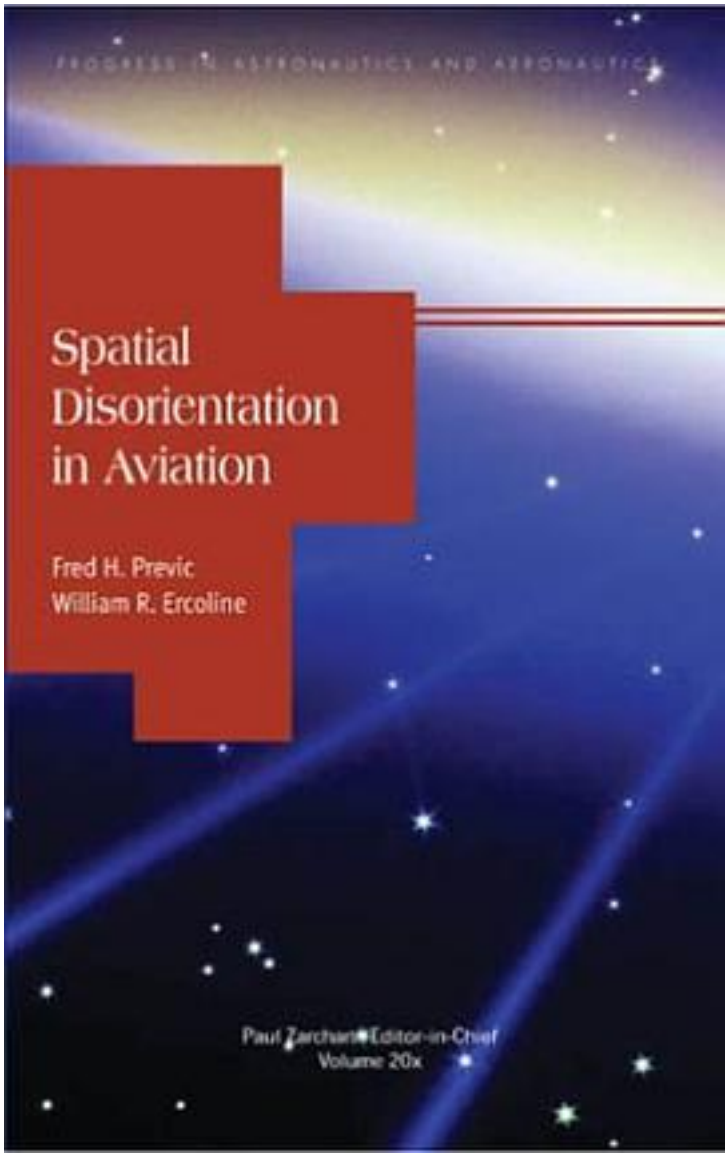
Spatial Disorientation in Aviation



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Spatial disorientation has been blamed for 20% of all fatal mishaps in military aviation and has been named as a factor in many high-profile civilian accidents, such as the death of John F. Kennedy Jr. and his wife, Carolyn Bessette Kennedy. It occurs when pilots' sensory systems, such as their vestibular or balance system, cause them to misinterpret their position in flight relative to Earth or other aircraft. Often, pilots do not know they are disoriented until it is too late. This book is unique because it is the first to cover the entire spectrum of spatial disorientation in flight. This text draws on the knowledge of expert authors from a broad background, several of whom have worked with the AFRL Human Effectiveness Directorate (AFRF/HE) at Wright Patterson AFB, OH and Brooks City-Base, TX. The book examines the long history of spatial disorientation in flight, describes the movements of aircraft in mathematical detail, and explains how these movements can conspire to fool human sensory systems that evolved for life on the ground. The book examines the structure and functions of the vestibular organs of the inner ear and their limitations under low-visibility flight situations. The book also examines the visual mechanisms that contribute to perceptions of self motion and describes the contribution of psychological factors to spatial disorientation. The book defines the types of visual and nonvisual illusions pilots experience in flight. Those chapters set the stage for a highly detailed examination of countermeasures, including ground-based training methodologies, in-flight sorties, instrument training, and display design. Much of the book is technical, but it is also rich inreal-world statistics and anecdotes about accidents and close calls that have been attributed to spatial disorientation.

作者介绍:

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