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Título: Homogeneous Finsler Spaces

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Sinopsis

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Presents the most recent results on the applications of Lie theory to Finsler geometry
Provides an accessible introduction to Finsler geometry that allows the reader to quickly understand topics and to access related problems

Contains related work concerning Randers spaces, making it suitable for readers with a background in biology, as well as various topics for readers with backgrounds in pure algebra?

This book is a unique addition to the existing literature in the field of Finsler geometry. This is the first monograph to deal exclusively with homogeneous Finsler geometry and to make serious use of Lie theory in the study of this rapidly developing field. The increasing activity in Finsler geometry can be attested in large part to the driving influence of S.S. Chern, its proven use in many fields of scientific study such as relativity, optics, geosciences, mathematical biology, and psychology, and its promising reach to real-world applications. This work has potential for broad readership; it is a valuable resource not only for specialists of Finsler geometry, but also for differential geometers who are familiar with Lie theory, transformation groups, and homogeneous spaces. The exposition is rigorous, yet gently engages the reader_student and researcher alike_in developing a ground level understanding of the subject. A one-term graduate course in differential geometry and elementary topology are prerequisites.

In order to enhance understanding, the author gives a detailed introduction and motivation for the topics of each chapter, as well as historical aspects of the subject, numerous well-selected examples, and thoroughly proved main results. Comments for potential further development are presented in Chapters 3-7. A basic introduction to Finsler geometry is included in Chapter 1; the essentials of the related classical theory of Lie groups, homogeneous spaces and groups of isometries are presented in Chapters 2-3. Then the author develops the theory of homogeneous spaces within the Finslerian framework. Chapters 4-6 deal with homogeneous, symmetric and weakly symmetric Finsler spaces. Chapter 7 is entirely devoted to homogeneous Randers spaces, which are good candidates for real world applications and beautiful illustrators of the developed theory.

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Content Level » Research

Keywords » Finsler geometry - Killing vector fields - Lie theory - Myers-Steenrod Theorem - Randers spaces - isometry groups