



Conformal Differential Geometry and Its Generalizations

Maks A. Akivis, Vladislav V. Goldberg

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DESCRIPTION

Comprehensive coverage of the foundations, applications, recent developments, and future of conformal differential geometry

Conformal Differential Geometry and Its Generalizations is the first and only text that systematically presents the foundations and manifestations of conformal differential geometry. It offers the first unified presentation of the subject, which was established more than a century ago. The text is divided into seven chapters, each containing figures, formulas, and historical and bibliographical notes, while numerous examples elucidate the necessary theory.

Clear, focused, and expertly synthesized, Conformal Differential Geometry and Its Generalizations

- * Develops the theory of hypersurfaces and submanifolds of any dimension of conformal and pseudoconformal spaces.
- * Investigates conformal and pseudoconformal structures on a manifold of arbitrary dimension, derives their structure equations, and explores their tensor of conformal curvature.
- * Analyzes the real theory of four-dimensional conformal structures of all possible signatures.
- * Considers the analytic and differential geometry of Grassmann and almost Grassmann structures.
- * Draws connections between almost Grassmann structures and web theory.

Conformal differential geometry, a part of classical differential geometry, was founded at the turn of the century and gave rise to the study of conformal and almost Grassmann structures in later years. Until now, no book has offered a systematic presentation of the multidimensional conformal differential geometry and the conformal and almost Grassmann structures.

After years of intense research at their respective universities and at the Soviet School of Differential Geometry, Maks A. Akivis and Vladislav V. Goldberg have written this well-conceived, expertly executed volume to fill a void in the literature. Dr. Akivis and Dr. Goldberg supply a deep foundation, applications, numerous examples, and recent developments in the field. Many of the findings that fill these pages are published here for the first time, and previously published results are reexamined in a unified context.

The geometry and theory of conformal and pseudoconformal spaces of arbitrary dimension, as well as the theory of Grassmann and almost Grassmann structures, are discussed and analyzed in detail. The topics covered not only advance the subject itself, but pose important questions for future investigations. This exhaustive, groundbreaking text combines the classical results and recent developments and findings.

This volume is intended for graduate students and researchers of differential geometry. It can be especially useful to those students and researchers who are interested in conformal and Grassmann differential geometry and their applications to theoretical physics.

ABOUT THE AUTHOR

Maks A. Akivis is Professor of Mathematics at the Ben-Gurion University of the Negev in Beer-Sheva, Israel, and at the Moscow Institute of Steel and Alloys in Russia.

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Dr. Akivis and Dr. Goldberg are the authors of numerous papers, many of which they wrote jointly. They are the authors of the book *Tensor Calculus* and the monograph *Projective Differential Geometry of Submanifolds*. In addition, Dr. Akivis is a coauthor of the monograph *Geometry and Algebra of Multidimensional Three-Webs* and the book *Elie Cartan (1869-1951)*, and Dr. Goldberg is the author of the monograph *Theory of Multicodimensional $(n+1)$ -Webs*.

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