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Lie Sphere Geometry

With Applications to Submanifolds

T. E. Cecil, College of the Holy Cross, Worcester, MA, USA

This book begins with Lie's construction of the space of spheres, including the fundamental notions of oriented contact, parabolic pencils of spheres and Lie sphere transformation. The link with Euclidean submanifold theory is established via the Legendre map, providing a framework for the study of submanifolds, especially those characterized by restrictions on their curvature spheres. This new edition contains revised sections on taut submanifolds, compact proper Dupin submanifolds, reducible Dupin submanifolds, Lie frames and frame reductions. Also included is new material on isoparametric hyperspaces in spheres, Dupin hyperspaces with three and four principle curvatures.

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G. Greuel, G. Pfister, University of Kaiserslautern, Germany

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A. Soifer, University of Colorado, Colorado Springs, CO, USA

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C. Rousseau, Y. Saint-Aubin, Université de Montreal, QC, Canada

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N. I. Koblitz, University of Washington, Seattle, WA, USA

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R. O. Wells, Jr., Jacobs University Bremen, Germany

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