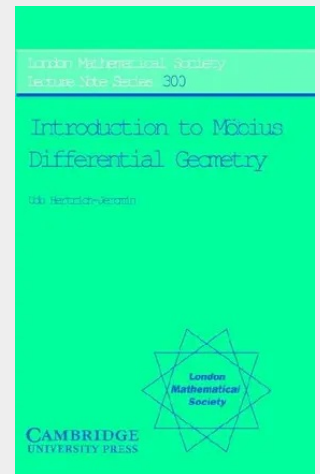


Introduction to Möbius Differential Geometry

This book introduces the reader to the geometry of surfaces and submanifolds in the conformal n -sphere. Various models for Möbius geometry are presented: the classical projective model, the quaternionic approach, and an approach that uses the Clifford algebra of the space of homogeneous coordinates of the classical model; the use of 2-by-2 matrices in this context is elaborated. For each model in turn applications are discussed. Topics comprise conformally flat hypersurfaces, isothermic surfaces and their transformation theory, Willmore surfaces, orthogonal systems and the Ribaucour transformation, as well as analogous discrete theories for isothermic surfaces and orthogonal systems. Certain relations with curved flats, a particular type of integrable system, are revealed. Thus this book will serve both as an introduction to newcomers (with background in Riemannian geometry and elementary differential geometry) and as a reference work for researchers.

This introduction to the conformal differential geometry of surfaces and submanifolds covers those aspects of the geometry of surfaces that only refer to an angle measurement, but not to a length measurement. Different methods (models) are presented for analysis and computation. Various applications to areas of current research are discussed, including discrete net theory and certain relations between differential geometry and integrable systems theory.



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