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Sinopsis

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This book is intended for researchers interested in new aspects of local behavior of plane mappings and their applications. The presentation is self-contained, but the reader is assumed to know basic complex and real analysis.

The study of the local and boundary behavior of quasiconformal and bi-Lipschitz mappings in the plane forms the core of the book. The concept of the infinitesimal space is used to investigate the behavior of a mapping at points without differentiability. This concept, based on compactness properties, is applied to regularity problems of quasiconformal mappings and quasiconformal curves, boundary behavior, weak and asymptotic conformality, local winding properties, variation of quasiconformal mappings, and criteria of univalence. Quasiconformal and bi-Lipschitz mappings are instrumental for understanding elasticity, control theory and tomography, and the book also offers a new look at the classical areas such as the boundary regularity of a conformal map. Complicated local behavior is illustrated by many examples.

The text offers a detailed development of the background for graduate students and researchers. Starting with the classical methods to study quasiconformal mappings, this treatment advances to the concept of the infinitesimal space and then relates it to other regularity properties of mappings in Part II. The new unexpected connections between quasiconformal and bi-Lipschitz mappings are treated in Part III. There is an extensive bibliography.

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Readership

Researchers interested in new aspects of local behavior of plane mappings and their applications.

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