

The beltrami equation : a geometric approach

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Abstrak

This book is devoted to the Beltrami equations that play a significant role in geometry, analysis and physics and, in particular, in the study of quasiconformal mappings and their generalizations, Riemann surfaces, Kleinian groups, Teichmüller spaces, Clifford analysis, meromorphic functions, low dimensional topology, holomorphic motions, complex dynamics, potential theory, electrostatics, magnetostatics, hydrodynamics and magneto-hydrodynamics.

The purpose of this book is to present the recent developments in the theory of Beltrami equations; especially those concerning degenerate and alternating Beltrami equations. The authors study a wide circle of problems like convergence, existence, uniqueness, representation, removal of singularities, local distortion estimates and boundary behavior of solutions to the Beltrami equations. The monograph contains a number of new types of criteria in the given problems, particularly new integral conditions for the existence of regular solutions to the Beltrami equations that turned out to be not only sufficient but also necessary.

The most important feature of this book concerns the unified geometric approach based on the modulus method that is effectively applied to solving the mentioned problems. Moreover, it is characteristic for the book application of many new concepts as strong ring solutions, tangent dilatations, weakly flat and strongly accessible boundaries, functions of finite mean oscillations and new integral conditions that make possible to realize a more deep and refined analysis of problems related to the Beltrami equations