

CONTEMPORARY MATHEMATICS

573

Conformal Dynamics and Hyperbolic Geometry

Conference on Conformal Dynamics
and Hyperbolic Geometry
in Honor of Linda Keen's 70th Birthday
Graduate School and University Center of CUNY
New York, NY
October 21–23, 2010

Francis Bonahon
Robert L. Devaney
Frederick P. Gardiner
Dragomir Šarić
Editors



American Mathematical Society

Conformal Dynamics and Hyperbolic Geometry



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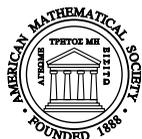
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Preface

This book is a collection of papers based on activity at the *Conference on Conformal Dynamics and Hyperbolic Geometry* held on October 21st to 23rd, 2010, in celebration of Linda Keen's seventieth birthday and sponsored by Lehman College, the Graduate Center of CUNY and the National Science Foundation.¹ The articles presented here fit into a grand strategy, which is to develop mathematical techniques that provide a foundation for understanding one dimensional real and complex dynamics. The topics include iteration of rational and holomorphic maps, the geometry of Fuchsian and Kleinian groups and objects that in the limit have asymptotically conformal structure including the universal hyperbolic solenoid and smooth circle expanding maps. Some of the articles go directly to the fractal and chaotic nature of the dynamical phenomena so richly displayed in many of the diagrams given herein and others focus primarily on tools and types of arguments that come mainly from complex analysis, hyperbolic geometry and Teichmüller theory.

This book will be useful for beginners and a primary source for young mathematicians looking for interesting research problems. It is therefore a fitting tribute to Professor Keen, who has done so much to make our CUNY Mathematics Ph.D. Program a hub of research for students and faculty alike and to support the significant number of mathematicians around the world who study these topics.

¹The conference acknowledges support from three sources: the Graduate Center of CUNY, Lehman College and the National Science Foundation Grant DMS 1042777.

This volume contains the proceedings of the Conference on Conformal Dynamics and Hyperbolic Geometry, held October 21–23, 2010, in honor of Linda Keen's 70th birthday.

This volume provides a valuable introduction to problems in conformal and hyperbolic geometry and one dimensional, conformal dynamics. It includes a classic expository article by John Milnor on the structure of hyperbolic components of the parameter space for dynamical systems arising from the iteration of polynomial maps in the complex plane. In addition there are foundational results concerning Teichmüller theory, the geometry of Fuchsian and Kleinian groups, domain convergence properties for the Poincaré metric, elaboration of the theory of the universal solenoid, the geometry of dynamical systems acting on a circle, and realization of Thompson's group as a mapping class group for a uniformly asymptotically affine circle endomorphism.

The portion of the volume dealing with complex dynamics will appeal to a diverse group of mathematicians. Recently many researchers working in a wide range of topics, including topology, algebraic geometry, complex analysis, and dynamical systems, have become involved in aspects of this field.

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