Topics in Complex Analysis

Dorothy B. Shaffer, Editor

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Most of the mathematical ideas presented in this volume are based on papers given at an AMS meeting held at Fairfield University in October 1983. The unifying theme of the talks was Geometric Function Theory.

Papers in this volume generally represent extended versions of the talks presented by the authors. In addition, the proceedings contain several papers that could not be given in person. A few of the papers have been expanded to include further research results obtained in the time between the conference and submission of manuscripts. In most cases, an expository section or history of recent research has been added. The authors' new research results are incorporated into this more general framework. The collection represents a survey of research carried out in recent years in a variety of topics.

The paper by Y J Leung deals with the Loewner equation, classical results on coefficient bodies and modern optimal control theory. Glenn Schober writes about the class Σ, its support points and extremal configurations. Peter Duren deals with support points for the class S, Loewner chains and the process of truncation.

A very complete survey about the role of polynomials and their limits in class S is contributed by T. J. Suffridge.

A generalization of the univalence criterion due to Nehari and its relation to the hyperbolic metric is contained in the paper by David Minda. The omitted area problem for functions in class S is solved in the paper by Roger Barnard. New results on angular derivatives and domains are represented in the paper by Burton Rodin and Stefan E. Warschawski, while estimates on the radial growth of the derivative of univalent functions are given by Thom McGregor.

In the paper by B. Bshouty and W. Hengartner a conjecture of Bombieri is proved for some cases. Other interesting problems for special subclasses are solved by B. A. Case and J. R. Quine; M. O. Reade, H. Silverman and P G. Todorov; H. Silverman and E. M. Silvia.

New univalence criteria for integral transforms are given by Edward Merkes. Potential theoretic results are represented in the paper by Jack Quine with new results on the Star Function and by David Tepper with free boundary problems in the flow around an obstacle. Approximation by functions which are the solutions of more general elliptic equations are treated by A. Dufresnoy, P. M. Gauthier and W. H. Ow.

At the time of preparation of these manuscripts, nothing was known about the proof of the Bieberbach conjecture Many of the authors of this volume and other experts in the field were recently interviewed by the editor regarding the effect of the proof of the conjecture. Their ideas regarding future trends in research in complex analysis are presented in the epilogue by Dorothy Shaffer.

A graduate level course in complex analysis provides adequate background for the enjoyment of this book.

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