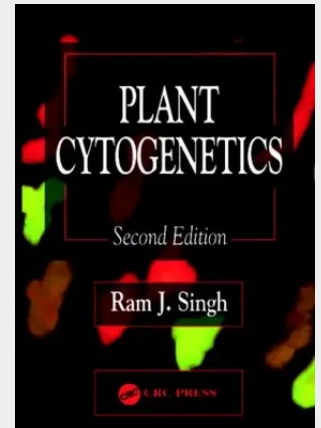


Progress in Holomorphic Dynamics

In the last few decades, complex dynamical systems have received widespread public attention and emerged as one of the most active fields of mathematical research. Starting where other monographs in the subject end, *Progress in Holomorphic Dynamics* advances the theoretical aspects and recent results in complex dynamical systems, with particular emphasis on Siegel discs. Organized into four parts, the papers in this volume grew out of three workshops: two hosted by the Georg-August-Universität Göttingen and one at the "Mathematisches Forschungsinstitut Oberwolfach." Part I addresses linearization. The authors review Yoccoz's proof that the Brjuno condition is the optimal condition for linearizability of indifferent fixed points and offer a treatment of Perez-Marco's refinement of Yoccoz's work. Part II discusses the conditions necessary for the boundary of a Siegel disc to contain a critical point, builds upon Herman's work, and offers a survey of the state-of-the-art regarding the boundaries of Siegel discs. Part III deals with the topology of Julia sets with Siegel discs and contains a remarkable highlight: C.L. Petersen establishes the existence of Siegel discs of quadratic polynomials with a locally connected boundary. Keller, taking a different approach, explains the relations between locally connected "real Julia sets" with Siegel discs and the abstract concepts of kneading sequences and itineraries. Part IV closes the volume with four papers that review the different directions of present research in iteration theory. It includes discussions on the relations between commuting rational functions and their Julia sets, interactions between the iteration of polynomials and the iteration theory of entire transcendental functions, a deep analysis of the topology of the limbs of the Mandelbrot set, and an overview of complex dynamics in higher dimensions.



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