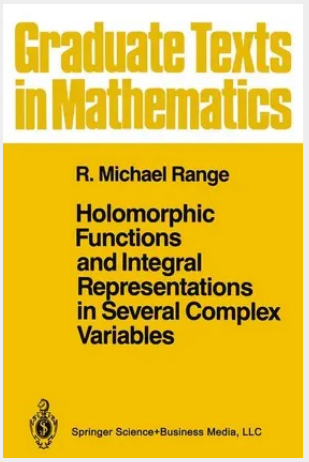
Range

Holomorphic Functions and Integral Representations in Several Complex Variables



The subject of this book is Complex Analysis in Several Variables. This text begins at an elementary level with standard local results, followed by a thorough discussion of the various fundamental concepts of "complex convexity" related to the remarkable extension properties of holomorphic functions in more than one variable. It then continues with a comprehensive introduction to integral representations, and concludes with complete proofs of substantial global results on domains of holomorphy and on strictly pseudoconvex domains inC", including, for example, C. Fefferman's famous Mapping Theorem. The most important new feature of this book is the systematic inclusion of many of the developments of the last 20 years which centered around integral representations and estimates for the Cauchy-Riemann equations. In particu lar, integral representations are the principal tool used to develop the global theory, in contrast to many earlier books on the subject which involved methods from commutative algebra and sheaf theory, and/or partial differ ential equations. I believe that this approach offers several advantages: (1) it uses the several variable version of tools familiar to the analyst in one complex variable, and therefore helps to bridge the often perceived gap between com plex analysis in one and in several variables; (2) it leads quite directly to deep global results without introducing a lot of new machinery; and (3) concrete integral representations lend themselves to estimations, therefore opening the door to applications not accessible by the earlier methods.

This is an introductory text in several complex variables, using methods of integral representations. It begins with elementary local results, discusses basic new concepts of the multi-dimensional theory such as pseudoconvexity and holomorphic convexity, and leads up to complete proofs of fundamental global results, both classical and new.

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