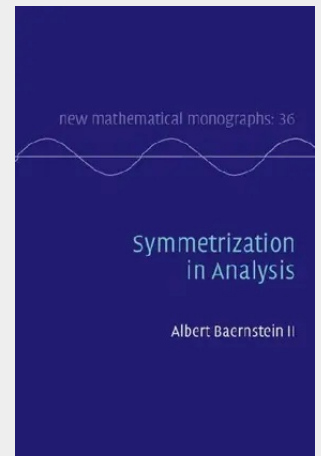


Symmetrization in Analysis

Symmetrization is a rich area of mathematical analysis whose history reaches back to antiquity. This book presents many aspects of the theory, including symmetric decreasing rearrangement and circular and Steiner symmetrization in Euclidean spaces, spheres and hyperbolic spaces. Many energies, frequencies, capacities, eigenvalues, perimeters and function norms are shown to either decrease or increase under symmetrization. The book begins by focusing on Euclidean space, building up from two-point polarization with respect to hyperplanes. Background material in geometric measure theory and analysis is carefully developed, yielding self-contained proofs of all the major theorems. This leads to the analysis of functions defined on spheres and hyperbolic spaces, and then to convolutions, multiple integrals and hypercontractivity of the Poisson semigroup. The author's 'star function' method, which preserves subharmonicity, is developed with applications to semilinear PDEs. The book concludes with a thorough self-contained account of the star function's role in complex analysis, covering value distribution theory, conformal mapping and the hyperbolic metric.

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