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Families of Total Asymptotically Nonexpansive Maps -- Common Fixed Points for One-parameter Nonexpansive Semigroup -- Single-valued Accretive Operators; Applications; Some Open Questions.

Sommario/riassunto

Nonlinear functional analysis and applications is an area of study that has provided fascination for many mathematicians across the world. This monograph delves specifically into the topic of the geometric properties of Banach spaces and nonlinear iterations, a subject of extensive research over the past thirty years. Chapters 1 to 5 develop materials on convexity and smoothness of Banach spaces, associated moduli and connections with duality maps. Key results obtained are summarized at the end of each chapter for easy reference. Chapters 6 to 23 deal with an in-depth, comprehensive and up-to-date coverage of the main ideas, concepts and results on iterative algorithms for the approximation of fixed points of nonlinear nonexpansive and pseudo-contractive-type mappings. This includes detailed workings on solutions of variational inequality problems, solutions of Hammerstein integral equations, and common fixed points (and common zeros) of families of nonlinear mappings. Carefully referenced and full of recent, incisive findings and interesting open-questions, this volume will prove useful for graduate students of mathematical analysis and will be a key-read for mathematicians with an interest in applications of geometric properties of Banach spaces, as well as specialists in nonlinear operator theory.