An introductory course in summability theory for students, researchers, physicists, and engineers

In creating this book, the authors’ intent was to provide graduate students, researchers, physicists, and engineers with a reasonable introduction to summability theory. Over the course of nine chapters, the authors cover all of the fundamental concepts and equations informing summability theory and its applications, as well as some of its lesser known aspects. Following a brief introduction to the history of summability theory, general matrix methods are introduced, and the Silverman-Toeplitz theorem on regular matrices is discussed. A variety of special summability methods, including the Nörlund method, the Weighted Mean method, the Abel method, and the (C, 1) - method are next examined. An entire chapter is devoted to a discussion of some elementary Tauberian theorems involving certain summability methods. Following this are chapters devoted to matrix transforms of summability and absolute summability domains of reversible and normal methods; the notion of a perfect matrix method; matrix transforms of summability and absolute summability domains of the Cesàro and Riesz methods; convergence and the boundedness of sequences with speed; and convergence, boundedness, and summability with speed.

• Discusses results on matrix transforms of several matrix methods

• The only English-language textbook describing the notions of convergence, boundedness, and summability with speed, as well as their applications in approximation theory

• Compares the approximation orders of Fourier expansions in Banach spaces by different matrix methods
• Matrix transforms of summability domains of regular perfect matrix methods are examined

• Each chapter contains several solved examples and end-of-chapter exercises, including hints for solutions

An Introductory Course in Summability Theory is the ideal first text in summability theory for graduate students, especially those having a good grasp of real and complex analysis. It is also a valuable reference for mathematics researchers and for physicists and engineers who work with Fourier series, Fourier transforms, or analytic continuation.

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