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Sommario/riassunto	In 1922, Harald Bohr and Johannes Mollerup established a remarkable characterization of the Euler gamma function using its log-convexity property. A decade later, Emil Artin investigated this result and used it to derive the basic properties of the gamma function using elementary methods of the calculus. Bohr-Mollerup's theorem was then adopted by Nicolas Bourbaki as the starting point for his exposition of the gamma function. This open access book develops a far-reaching generalization

of Bohr-Mollerup's theorem to higher order convex functions, along lines initiated by Wolfgang Krull, Roger Webster, and some others but going considerably further than past work. In particular, this generalization shows using elementary techniques that a very rich spectrum of functions satisfy analogues of several classical properties of the gamma function, including Bohr-Mollerup's theorem itself, Euler's reflection formula, Gauss' multiplication theorem, Stirling's formula, and Weierstrass' canonical factorization. The scope of the theory developed in this work is illustrated through various examples, ranging from the gamma function itself and its variants and generalizations (q-gamma, polygamma, multiple gamma functions) to important special functions such as the Hurwitz zeta function and the generalized Stieltjes constants. This volume is also an opportunity to honor the 100th anniversary of Bohr-Mollerup's theorem and to spark the interest of a large number of researchers in this beautiful theory.