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Analytic representation and the Mittag-Leffler circle: Contrasting notions of generality in the late 19th century

Mittag-Leffler developed the theorem which bears his name between 1876 and 1884, following his apprenticeship in Berlin under Weierstrass, whose Factorization Theorem served as the point of departure for Mittag-Leffler's work. Where Weierstrass developed a representation for entire functions which displayed their zeros and their multiplicities, Mittag-Leffler focused on the analytic representation of functions with the most extensive possible set of singularities with the aim, from at least 1877, of representing those with even infinitely many essential singularities.

To Mittag-Leffler and Weierstrass, such analytic representations, fundamental to the Weierstrassian definition of a function itself, formed the most general "unit" of analysis. Indeed, studies devoted to the representation of functions were mainstream during this period. Yet others, and Cantor in particular, saw this dependence on analytic representations as problematic. His correspondence with Mittag-Leffler illuminates a shifting understanding of what it meant to be "general", or "more general" in mathematics. In this talk, I shall discuss the concept of "generality" foundational to the Mittag-Leffler Theorem, and consider the importance of this concept to some of Mittag-Leffler's contemporaries.