

## Preface

It is a great pleasure to see the current volume on the correspondence between Gösta Mittag-Leffler and Vito Volterra published by the European Mathematical Society. The exchange of ideas between the two and their common passion for mathematics certainly helped Mittag-Leffler form his vision of the research institute that he founded by donating his magnificent villa with its library to the Royal Swedish Academy of Sciences, to transform it into a center dedicated to mathematical research. The villa is located in beautiful Djursholm in close proximity to Stockholm where the institute, which is in fact the oldest mathematics research center in the world, still operates today.

Following the ideas and wishes of Gösta Mittag-Leffler, the institute is an international meeting place for research and postdoctoral training in the mathematical sciences. It found its current form in 1969 under the visionary leadership of Lennart Carleson. It is run under the auspices of the Royal Swedish Academy of Sciences and is governed by a board with representatives from all Nordic countries. It welcomes visitors all year for short or longer stays.

The premises of the institute encompass several buildings: the main building including a library, office and discussion spaces for researchers and staff, a seminar room building, and five other buildings with housing facilities for visiting researchers. The mission of Institut Mittag-Leffler is to support international top-level research in mathematics, with special attention to the development in the Nordic countries. The institute is a hub for the international mathematical research community and for mathematicians in the Nordic countries.

The main activities include research programs, conferences, workshops, seminars and summer schools, which all aim to conduct and develop current mathematical research. The institute also publishes two mathematical journals, *Acta Mathematica* (founded by Mittag-Leffler in 1882) and *Arkiv för matematik* (founded in 1903), all volumes of both journals being freely available online. In this way the institute operates to this day in the spirit of its founder. It develops mathematics through interactions and meetings between mathematicians from all over the world and offers a research environment where new mathematical ideas are born, discussed, and tested by world leading researchers.

It is remarkable to note that many subjects of the exchange between Mittag-Leffler and his Italian colleague — for example mathematical physics and partial differential equations as well as various aspects of Analysis — are connected to important research areas still well represented at the institute, for example with recent programs in Fractal Geometry and Dynamics (2016) and Spectral Methods in Mathematical Physics (2019).

The present book gives unique and direct access to the line of thought of two mathematicians that in many ways, a century ago, helped shape the mathematical world of today. A particularly useful aspect is the exposition of ‘mathematics in the raw’. In the letters, and the accompanying contextual introduction that analyzes their contents, we meet profound ideas and problems studied directly, without formal definitions and established methods (that were eventually formulated only later). Altogether, this set of letters deepens our understanding both of mathematics as a subject and of the intellectual environment out of which Institut Mittag-Leffler was born.

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