HAUSDORFF RESEARCH INSTITUTE FOR MATHEMATICS

UNIVERSITÄT BONN

JUNIOR TRIMESTER PROGRAM | January - April, 2026

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Computational multifidelity, multilevel, and multiscale methods

In recent years, the development of analytic tools to study geometric questions in metric spaces beyond Riemannian manifolds has seen tremendous progress and led to many structural results which shed a new light even on classical questions. The goal of this HIM program is to further refine such tools and explore their applications, like the study of filling invariants, norms, volumes, energies, in various concrete geometric frameworks.

The program aims at bringing together researchers in analysis on metric spaces, geometric group theory, differential geometry, higher Teichmüller theory and low dimensional topology to isolate and enhance common core ideas and tie these strands to a more global theory, geared at making progress towards some well established open problems.

We will have the following activities:

Winter School "Bridging multiscale, limited information, and low regularity in computational mathematics" **(January 19 - 23, 2026)**

Workshop "Multifidelity Methods for Stochastic and Uncertain Problems" **(February 2 - 6. 2026)**

Workshop "Optimal approximation spaces for multiscale problems" **(February 23 - 27, 2026)**

Workshop "Taming the PDEs: Tailored Methods, Multiscale Approaches, and Real-World Application" **(March 9 - 13, 2026)**

The Junior Trimester Program is primarily addressed to PhD students, postdocs and young assistant professors. Each week of the Junior Trimester Program includes numerous activities, such as a seminar series, lecture series, reading courses and so on. In addition, there are some major events, one Winter School and three workshops. The workshops are aimed at people who are participants in this Junior Trimester Program at that time. For more information, please visit the program page at https://www.mathematics.uni-bonn.de/him/programs/future/him-junior-trimester-program-computational-multifidelity-multilevel-and-multiscale-methods.