

The **Vienna School of Mathematics (VSM)** is a joint graduate school of the mathematics faculties of the **University of Vienna** and the **TU Wien**. The VSM is devoted to top-level PhD education in all branches of mathematics. It fosters intra- and interdisciplinary scientific cooperation and networking among students and advisors and aims at increasing the international visibility of the Vienna area as a center for mathematics.

The VSM currently announces a PhD position in the area of

Computational nonlinear PDES (TU Wien, Supervisor: Dirk Praetorius)

The ultimate goal of any numerical scheme is to compute a discrete solution with error below a prescribed tolerance at, up to a multiplicative constant, the minimal computational cost. Usually, the convergence behavior of numerical schemes is, however, spoiled by singularities of the given data and/or the unknown solution. Moreover, nonlinear PDEs naturally lead to discrete nonlinear systems, which cannot be solved exactly, but have to be solved approximately by (usually even nested) iterative methods. Therefore, the numerical solver has to balance the discretization error as well as the solver error by controlling and steering

- (1) the underlying discretization,*
- (2) the error from linearizing the discrete nonlinear systems,*
- (3) the algebraic error from the inexact solution of the arising linear equations*

We aim to develop and analyze adaptive algorithms for the numerical solution of nonlinear PDEs, which mathematically guarantee optimal convergence with respect to the overall computational costs. All theoretical findings shall be implemented in MATLAB or Python.

The potential candidates should have a solid mathematical background in numerical analysis and/or functional analysis and/or analysis of PDEs.

The advertised position is associated with the Institute of Analysis and Scientific Computing of **TU Wien** in the Research Group on Numerics of PDEs of Prof. Dr. Dirk Praetorius. The successful candidate will become a member of the Vienna School of Mathematics and is expected to actively contribute to its activities. The extent of employment is 30 hours per week. The position will start on September 1, 2020 (negotiable).

Application Requirements and Procedure

The candidates must have a master degree (or equivalent) in Mathematics at the moment the PhD position starts. The application documents should contain a letter of motivation; the scientific CV with publications list; higher education certificates/diplomas; and letter(s) of recommendation. Applications have to be sent to ursula.schweigler@tuwien.ac.at. The deadline for applications is **July 1, 2020**.