

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 PDEs for Cosmology (University of Vienna, Supervisor: O. Hahn)

A key challenge in numerical cosmology is the development of highly efficient computational methods for hyperbolic PDEs (Euler-Poisson, Vlasov-Poisson). To infer parameters of physical models and the initial conditions from incomplete observed data (such as by the Euclid satellite that will observe billions of galaxies), efficient and domain specific numerical methods that can serve as a forward model in an ill-defined non-linear inverse problem are highly sought after.

Specifically, this project will focus on extending recent progress in optimized integration schemes to the Euler-Poisson system. Another focus will be on the actual implementation and application of the new methods to HPC simulations in collaboration with the research team. Our ideal candidate brings a strong background in computational PDEs, experience with programming, and some prior knowledge in machine learning or statistics.

The advertised position is associated with the Faculty of Mathematics of the **University of Vienna**. 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 is planned to start on March 1, 2024 or later.

Application Requirements and Procedure

The candidates must have a master degree (or equivalent) in Mathematics or a related field (Computational Science, Theoretical Physics ...) at the moment the PhD position starts. The application documents should contain a letter of motivation, an academic curriculum vitae, a summary of prior research activities, and future research interests (max. 2 pages), a copy of the Master's thesis, as well as list of publications and presentations (if applicable), and one letter of reference to be sent directly to oliver.hahn@univie.ac.at referencing the job ad ID 1551. Applications have to be sent via the Job Center of the University of Vienna [at the Reference number 1551](#). The deadline for application is **January 19, 2024**.