



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 four-year PhD position in the area of

Generalized Kokotsakis Meshes & Bricard Octahedra (TU Wien, Supervisor: Georg Nawratil)

This research project is funded by the Austrian Science Fund FWF (Grant-DOI: 10.55776/PAT1713226) on the crossroads of kinematic and algebraic geometry and it is devoted to the study of discrete structures that can move only because of special geometric relations among their components. Such overconstrained mechanisms often contain Kokotsakis belts: polyhedral strips surrounding an n -sided central polygon, with three faces meeting at each vertex. For $n=3$, Kokotsakis belts are closely related to Bricard's flexible octahedra, since an additional eighth face can be attached without restricting their motion. To expand the design space for transformable structures, the project generalizes these mechanisms by allowing skew faces and by admitting not only spherical 4R-loops, but also planar 4R-loops and Bennett 4R-mechanisms.

The project aims to classify these generalized structures with overconstrained mobility. This basic research has potential applications in transformable design for engineering, architecture, robotics, metamaterials and art — often inspired by origami. For further information on the project, as well as related publications and talks, see:

<https://www.geometrie.tuwien.ac.at/nawratil/gkmbo.html>

Applicants should have a solid background in areas relevant to the project, in particular kinematics and algebraic geometry. In addition, basic skills in using the computer algebra system Maple are expected.

The advertised position is based at the Institute of Discrete Mathematics and Geometry of TU Wien in the Research Group Differential Geometry & Geometric Structures, which is also part of the Center for Geometry and Computational Design. The successful candidate will become a member of the Vienna School of Mathematics and is expected to actively contribute to its activities. The position is offered at 30 hours per week. The gross monthly salary is approximately EUR 2,900 (14 payments per year), subject to the applicable salary regulations (see <https://www.fwf.ac.at/en/funding/steps-to-your-fwf-project/further-information/personnel-costs>). The position can start flexibly in March 2027 or later.

Application Requirements and Procedure

Applicants must hold a master's degree (or equivalent) in mathematics, geometry, or a closely related field by the start date of the PhD position. Applications should include a letter of motivation, a CV, and copies of higher-education certificates and diplomas. Letters of recommendation are welcome and should preferably be submitted directly by the referees to nawratil@geometrie.tuwien.ac.at. Applications should be sent by email to nawratil@geometrie.tuwien.ac.at, if possible as a single PDF file, by **13 December 2026**.