

9th VSM Call for Applications (December 2023)

1. Up to 2 PhD Positions Financed by the VSM (University of Vienna)

For these positions (directions for) PhD projects have been proposed. Applications are only possible for specific projects from the list.

List of projects (in alphabetical order):

1. [Non-linear Frame Theory for Neural Networks](#) (Supervisors: Peter Balazs, Martin Ehler)
 2. [Singularity Formation for Wave maps and Yang-Mills Models on Curved Backgrounds](#) (Supervisor: Roland Donniger)
 3. [Topological Quantum Field Theories in Contact Topology](#) (Supervisors: Anton Mellit, Vera Vértési)
 4. [Topics from the Langlands Program](#) (Supervisor: Alberto Mínguez)
 5. [Descriptive Set Theoretic Methods in General Relativity](#) (Supervisor: Aristotelis Panagiotopoulos)
 6. [Deep Neural Network Learning of Functions with Distributed Singularities](#) (Supervisor: Philipp Petersen)
 7. [Intrinsic Distances of Neural Network Spaces](#) (Supervisor: Philipp Petersen)
 8. [Basic and Elliptic Appell Hypergeometric Series](#) (Supervisor: Michael J. Schlosser)
 9. [Elliptic Hypergeometrics Combinatorics](#) (Supervisor: Michael J. Schlosser)
 10. [Mathematical Structure of Tensor Network States](#) (Supervisor: Norbert Schuch)
 11. [Quantum Many-Body Problems for Near Term Quantum Computers](#) (Supervisor: Norbert Schuch)
 12. [Synthetic Singularity Theorems in General Relativity](#) (Supervisor: Roland Steinbauer)
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2. **Synthetic Lorentzian Geometry and Non-smooth Differential Geometry** (University of Vienna, Supervisors: Michael Kunzinger, Roland Steinbauer);
 3. **Computational Optimization** (University of Vienna, Supervisor: Yurii Malitskyi)
 4. **5 PhD Positions associated to the SFB „Discrete random random structures: enumeration and scaling limits“,** (3 positions at the University of Vienna, 2 at TU Wien)
 5. **Lasso-type methods for pattern selection in high-dimensional statistics** (TU Wien, Supervisor: Ulrike Schneider)
 6. **Parameter analysis of certain classes of directed acyclic graphs** (TUWien, Supervisor: Bernhard Gittenberger)