

## 6<sup>th</sup> VSM Call for Applications (Application Deadlines: April 28/April 30/May 3, 2022)

### 1. Up to four PhD positions financed by the VSM (University of Vienna); application deadline April 30, 2022

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. [Stability of Word Maps, with Applications](#) (Supervisor: Goulnara Arzhantseva)
2. [Expander Graphs, with Applications](#) (Supervisor: Goulnara Arzhantseva)
3. [Towards a Geometric Understanding of the Space of Stochastic Processes](#) (Supervisors: Julio Backhoff-Veraguas, Mathias Beiglböck)
4. [Optimization Methods for Audio Processing](#) (Supervisor: Peter Balazs)
5. [Higher Order Mixing in Parabolic Dynamics](#) (Supervisor: Henk Bruin)
6. [Coarse Non-Positive Curvature in Groups](#) (Supervisor: Christopher Cashen; Co-Supervisor: Goulnara Arzhantseva)
7. [Low-Rank Tensor Decompositions in Scientific Machine Learning](#) (Supervisors: Vladimir Kazeev, Philipp Petersen)
8. [Combinatorics](#) (Supervisor: Christian Krattenthaler)
9. [Topics from the Langlands Program](#) (Supervisor: Alberto Mínguez)
10. [Repulsive Point Processes in Functional and Signal Analysis](#) (Supervisor: José Luis Romero)
11. [Probabilistic Models in Quantitative Genetics](#) (Supervisor: Emmanuel Schertzer)
12. [Stochastic Gradient Descent Algorithms for Imaging Problems](#) (Supervisor: Otmar Scherzer)
13. [Mathematical Structure of Tensor Network States](#) (Supervisor: Norbert Schuch)
14. [Quantum Many-Body Problems for Near Term Quantum Computers](#) (Supervisor: Norbert Schuch)
15. [Rare Events – Probabilistic Laws from Deterministic Dynamics](#) (Supervisor: Roland Zweimüller)

### 2. Variational Analysis of Magnetic Skyrmions (TU Wien, Supervisors: E. Davoli, G. Di Fratta); 2 positions; application deadline April 30

### 3. The Combinatorics of Grothendieck Polynomials (University of Vienna, I. Fischer); application deadline April 30

### 4. Alternating Sign Arrays and Plane Partitions (University of Vienna, I. Fischer); application deadline April 30

### 5. Discrete Differential Geometry (TU Wien, I. Izmistiev/U. Hertrich-Jeromin); application deadline April 28

### 6. Valuations on Convex Functions (TU Wien, M. Ludwig); application deadline April 30

### 7. Mathematical Analysis of Binary Black Hole Collisions (University of Vienna, W. Simon); application deadline April 30

**Position added later – later deadline:**

**8. Quot Schemes in the McKay Correspondence: Geometry, Combinatorics, Representation Theory** (University of Vienna, Supervisor: B. Szendroi, co-supervised by Adam Gyenge, Renyi Institute Budapest); application deadline May 3