Fully-funded PhD position at the University of Vienna:

Superconducting vortices in nanoscale tailored pinning landscapes

Superconductivity is an exciting phenomenon with many unresolved fundamental questions to be explored. Groundbreaking experiments require to pattern superconductors on the nanoscale with unprecedented density, complexity, and minimum size for a control of magnetic flux quanta, also called fluxons or vortices.

Our group is specialized in investigations of electronic transport properties under extreme conditions, like at high current densities, short time scales, and in ultralow or strong magnetic fields. The project aims at the investigation of tailored artificial pinning landscapes in copper-oxide superconductors, created by either shadow projection of a wide-field ion beam through a stencil mask or the focused beam of a helium-ion microscope. Novel approaches, like the vortex Hall effect, vortex ratchets, vortex melting in ultradense and complex pinning arrays, and other cutting-edge concepts will be investigated.

The PhD position can be fully funded for a duration of three years by a multi-national research project including groups from Austria, Germany, Belgium, and Spain that starts in October 2020. The research is embedded in the European network (COST) *Nanoscale Coherent Hybrid Devices for Superconducting Quantum Technologies*, which provides regular training schools, international contacts, and conference travel support. The academic supervision of the PhD candidate will take place in the framework of the *Vienna Doctoral School in Physics*, offering several benefits. Tuition fees will be waived.

The successful candidate should demonstrate a solid background in experimental Solid State Physics. Experience in one or more fields such as superconductivity, low-temperature techniques, nanofabrication, and magneto-transport measurements is welcome.

Further information: Prof. Wolfgang Lang; email: wolfgang.lang@univie.ac.at
Applications should be sent to https://vds-physics.univie.ac.at