

PostDoc position in experimental direct dark matter detection (all genders)

TU Wien and the Institute of High Energy Physics (HEPHY), Vienna, Austria
Experimental group for rare event searches – direct search for dark matter

The group for rare event searches, jointly run by TU Wien and HEPHY, is a member of the direct dark matter detection experiments CRESST and COSINUS, the neutrino experiment NUCLEUS, and the low-energy calibration effort CRAB. The group is heavily involved in data analysis and simulation for these experiments and develops their DAQ systems. The group is a member of the collaborative research center “Neutrinos and Dark Matter in Astro- and Particle Physics” www.sfb1258.de.

We are looking for a **postdoctoral researcher (PostDoc)** working on raw data analysis, software development, modeling of the response of cryogenic detectors and automation of detector operation for CRESST-III and future low-mass dark matter search experiments.

Technology advances in low-threshold cryogenic detectors in the last decade opened up the search window to dark matter particles much lighter than $1\text{GeV}/c^2$. However, further improvements will require an even more detailed understanding of the detector response obtained from an electrothermal feedback model. This model can also be used to develop automation algorithms for the optimal operation of the detectors. Automation is paramount for next-generation cryogenic dark matter searches utilizing large arrays of cryogenic detectors combining low thresholds with large exposure. The successful candidate is expected to contribute to the setup of a new planned cryogenic facility in Vienna. Involvement in DAQ software and DAQ electronics is possible and will be appreciated.

Keywords: Dark matter, (Astro-) particle physics, Cryogenic detectors, DAQ

Tasks:

- Raw data analysis
- Electrothermal feedback model which may include methods of machine learning
- On-site support at LNGS (Italy)
- contributions to the setup of the new planned cryolab
- Participation in international conferences and summer schools (travel costs will be covered)
- Cooperation and day-to-day supervision of undergraduate students
- Optional: participation in hard and software development of the data acquisition system

Required qualifications/skills:

- Scientific interest in particle physics and dark matter
- Expertise in cryogenic particle detectors
- Experience in programming (Python is required, C++ and/or Julia of advantage)
- Team-oriented and communication skills to work in an international and diverse collaboration
- Ability to perform independent, creative and innovative research
- PhD in physics (completed or close to completion)

Studies show that often suitable candidates self-select because they do not fulfill one of the criteria. We encourage everyone who is interested in the position to apply! The TU Wien is an equal opportunity employer. We affirm diversity and engage in creating an inclusive working environment for everybody.

The position will be opened for a period of four years. For this position, a minimum salary of € 4932,90 gross per month (14x a year, pay grade B1 of the Austrian collective agreement for university staff) with an employment for 40 hrs/week is offered, including full health and social insurance. Additional benefits for employees may be found in the [Fringe-Benefit Catalogue of TU Wien](#). More information about the Institute of High Energy Physics of the Austrian Academy of Sciences and the TU Wien may be found at: <https://www.oew.ac.at/hephy/> and at: <http://ati.tuwien.ac.at>

Your application should include a CV, a research statement (max. 2 pages) and three people which we may contact for further reference. Please send your application to Ass. Prof. Dr. Florian Reindl (florian.reindl@tuwien.ac.at).

The deadline is **March 09**, but we will receive and consider applications until the position is filled.