COSINUS

PhD Position for data analysis and simulation for the COSINUS dark matter experiment

Technical University and Institute of High Energy Physics, Vienna, Austria

We are looking for a PhD student working on data analysis and background simulation for the COSINUS dark matter search experiment. COSINUS is a new experiment currently in construction phase at the Gran Sasso underground laboratory (LNGS) in central Italy. Its goal is to provide a model-independent cross-check of the DAMA/LIBRA dark matter claim using NaI target crystals operated as cryogenic detectors.

The PhD position is embedded in the FWF[i] project AnaCONDa (Analysis of COSINUS Neutron Data) which is itself embedded in the experimental group for rare event searches, jointly run by the Institute of Atomic and Subatomic Physics at the Technische Universität Wien and the Institute of High Energy Physics of the Austrian Academy of Sciences. Beyond COSINUS, this group is also a member of the CRESST dark matter search and the NUCLEUS experiment searching for coherent neutrino-nucleus scattering. All these three experiments are based on similar technology, the main contributions of the institute are the development of the data acquisition, background simulations and data analysis.

The main goal of AnaCONDa is to get a detailed model for the response of COSINUS detectors to nuclear recoils, as dark matter particles are expected to scatter off nuclei. This task includes to analyze COSINUS prototype and calibration measurements and to carry out Monte Carlo simulations. The successful candidate will contribute to both work packages expanding the already existing tools for the specific needs of AnaCONDa and COSINUS. Given that COSINUS continues to keep its schedule, the successful candidate will also contribute to the first dark matter results of COSINUS planned for 2022/2023. On-site contributions to the main installation of COSINUS at LNGS and to measurements carried out at already existing test facilities at LNGS and/or Munich are expected.

The position will be opened for a period of three years. For this position, a minimum salary of € 2.162,40 gross per month (14x a year[ii]) with an employment for 30 hrs/week is offered. The candidate should have a Master degree in experimental particle physics and a solid background in astroparticle physics. Expertise in dark matter detection, modern programming languages, Geant4, Root, as well as data analysis and statistics will be an advantage.

The Technische Universität Wien is committed to increase female employment in leading scientist positions. Qualified female applicants are encouraged to apply and will be given preference if equally qualified. Handicapped persons with appropriate qualifications are also expressly encouraged to apply.

More information about the Institute of High Energy Physics of the Austrian Academy of Sciences and the Technische Universität Wien may be found at: http://www.hephy.at and at: http://ati.tuwien.ac.at

More information on the COSINUS experiment is available at: http://cosinus.it

For further Information please contact
Dr. Florian Reindl (florian.reindl@tuwien.ac.at)
and/or
Prof. Jochen Schieck (jochen.schieck@tuwien.ac.at).

Please arrange for two letters of recommendation and send the letters and your application to
HEPHY, Florian Reindl, Nikolsdorfer Gasse 18, 1050 Vienna, Austria, or by email to florian.reindl@tuwien.ac.at

The closing date for the submission of applications is February 29th, 2020.

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[i] Austrian Science Fund

[ii] https://www.fwf.ac.at/en/research-funding/personnel-costs