Faculty/Department: Mathematics, Informatics, Natural Sciences/Physics
Seminar/Institute: Institute of Experimental Physics

Universität Hamburg invites applications for a Research Associate for the project **"Determination of the Hierarchy of Neutrino Masses with the JUNO-Experiment"** in accordance with Section 28 subsection 3 of the Hamburg higher education act (Hamburgisches Hochschulgesetz, HmbHG). The position commences on as soon as possible.

It is remunerated at the salary level TV-L 13 and calls for 50 % of standard work hours per week*.

The fixed-term nature of this contract is based upon Section 2 of the academic fixed-term labor contract act (Wissenschaftszeitvertragsgesetz, WissZeitVG). The term is fixed for a period of 3 years.

The University aims to increase the number of women in research and teaching and explicitly encourages women to apply. Equally qualified female applicants will receive preference in accordance with the Hamburg act on gender equality (Hamburgisches Gleichstellungsgesetz, HmbGleiG).

Responsibilities:
Duties include academic services in the project named above. Research associates can also pursue independent research and further academic qualifications.

Specific Duties:
The main task for the holder of the position will be the further development of the 3D-topological reconstruction for low energy events (MeV) in large-volume liquid Scintillator detectors. In this, the first action will be the adaptation of the software towards the usage of realistics signal pulses (waveforms) generated by the JUNO-PMTs & electronics. Furthermore, a systematic treatment of Cherenkov-light should be implemented into the reconstruction code. The information about the Cherenkov-light should then be used to extend and optimise our existing methods to distinguish between electrons and positrons in JUNO into an energy region relevant for the decay products of muons. For this analysis modern machine learning methods should be applied.

A participation in the PMT-testing shifts of the JUNO experiment in China is required.

Requirements:
A university degree in a relevant field. Good programming skills in C++. Furthermore desirable are: Prior knowledge in the usage of machine learning methods, experience in international collaborations, excellent scientific performance in data analysis and track reconstruction and

* Full-time positions currently comprise 39 hours per week.

good knowledge concerning large-volume liquid Scintillatior- or Water-Cherenkov-detectors and their instrumentation.

Severely disabled applicants will receive preference over equally qualified non-disabled applicants.

For further information, please contact Prof. Dr. Caren Hagner (caren.hagner@desy.de) and Dr. Bjoern Wonsak (bwonsak@mail.desy.de) or consult our website at www.neutrino.uni-hamburg.de.

Applications should include a cover letter, curriculum vitae, and copies of degree certificate(s). The application deadline is 30/06/2019. Please send applications to: Prof. Dr. Caren Hagner, Fachbereich Physik, Institut für Experimentalphysik, Luruper Chaussee 149, 22761 Hamburg.