Faculty of Physics

The Institute of Nuclear and Particle Physics offers, subject to the availability of resources, a position as

**Research Associate / PhD Student (m/f/x)**
(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting on **February 1, 2022**. The position entails 50% of the fulltime weekly hours in the first year and 67.5% in the following years and is initially limited until January 31, 2025. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG). The position offers the chance to obtain further academic qualification (e.g. PhD).

The envisaged research will take place in the ATLAS research group led by Prof. Dr. Arno Straessner and will be part of the National Research Data Infrastructure consortium PUNCH4NFDI. The ATLAS Dresden group has a long-term experience in physics analysis of proton-proton collisions, detector development for the ATLAS liquid-argon calorimeters, and applications of machine learning to detector signal processing and to data analysis.

**Tasks:**
- development of machine learning approaches for the signal processing and energy reconstruction of the ATLAS liquid-argon calorimeters;
- exploration of anomaly detection for physics applications and for data quality assurance;
- transfer of machine learning solutions to Field Programmable Gate Arrays (FPGAs) and contribution to a general machine learning library for real-time processing on FPGAs;
- regular visits to CERN for collaborative work will be possible.

**Requirements:**
- very good university degree (Master’s or equivalent) with a specialization in the area of particle physics;
- research experience related to signal processing or advanced data analysis or machine learning, to FPGA programming using VHDL or High Level Synthesis tools, or equivalent expertise;
- high motivation to join the detector development and machine learning activities in the ATLAS experiment and to transfer these solutions to other particle physics and astrophysics experiments.

For further information about the position, you are invited to contact arno.straessner@tu-dresden.de. Applications from women are particularly welcome. The same applies to people with disabilities.

Please submit your comprehensive application including a Curriculum Vitae, a brief proposal describing your research experience and interests, an official transcript of coursework and grades and recommendation letters by two referees until **December 3, 2021** (stamped arrival date of the university central mail services applies) preferably via the TU Dresden SecureMail Portal https://securemail.tu-dresden.de by sending it as a single pdf document to nicole.schmidt3@tu-dresden.de or by mail to TU Dresden, Fakultät Physik, Institut für Kern- und Teilchenphysik, z. H. Frau Nicole Schmidt, Helmholtzstr. 10, 01069 Dresden. Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

**Reference to data protection:** Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: https://tu-dresden.de/karriere/datenschutzhinweis.