Experimental Nuclear and Particle Physics Center at Vilnius University, Faculty of Physics
is looking for a

PhD candidate

on the topic "*Analysis of neutral boson decay using data recorded with the CERN CMS detector during Run3*"

The Experimental Nuclear and Particle Physics Center participates in the CERN CMS experiment by analyzing the proton-proton collision data and participating in the CMS Tracker Phase II upgrade.

Description of the research topic

Compact muon solenoid experiment (CMS) at the Large Hadron Collider (LHC) at CERN registers proton-proton collisions for over a decade. The third data-taking period (Run3) started in 2023. More proton-proton collisions during each bunch-crossing increased the complexity of heavy particle identification, and previously used data analysis methods must be adapted to new conditions. Various particles are produced in proton-proton collisions. Experimental analysis of their production and decay rates allows improvement of theoretical models. Data analysis is performed by international research groups. The candidate would learn the CMS data analysis starting from participation in the measurement of the multidimensional reaction cross-section of photon and Z-boson decays using Run2 data. Although the thesis topic underlines data analysis, the candidate must contribute to technical tasks of the CMS detector and of the Tracker Phase II upgrade.

Requirements

- Master's degree in physics.
- Good written and spoken English.
- Candidate is expected to work on-site in Vilnius University Saulėtekis Campus for the full term of the PhD contract (4 years).
- Application for participation in the CERN Doctoral student program is expected. Successful admission would provide funds for a partial stay at CERN.
- Experience with large-scale data analysis, good knowledge of electronics, and hands-on experience in a scientific lab will be considered an advantage.

We offer

- 4-year PhD contract, starting from the 1 October 2024.
- An untaxed scholarship of 1045 EUR/month for the first year and 1210 EUR/month starting from the second year. Additionally, the PhD student can be employed part-time as a laboratory technician with salary 462 EUR/month (before taxes). There is a possibility of further upgrading the position to junior research assistant with a salary of 980 EUR/month (before taxes) upon achieving the required results.

Application instructions

- The applications should be sent by e-mail to Dr. Andrius Juodagalvis (andrius.juodagalvis@ff.vu.lt) by 30 April 2024. The applications must include: (i) curriculum vitae, (ii) cover letter describing your interest, (iii) publication list, if any, (iv) two recommendation letters, one from the master thesis supervisor and the second from any other professor.
- The selected applicants will be invited for the remote interview by 15 May 2024.
- The decision for the selected candidate will be announced by 31 May 2024.

For any further information, please contact Dr. Andrius Juodagalvis (andrius.juodagalvis@tfai.vu.lt).