

# Competition for a student scholarship as part of the NCN OPUS 22 project

**Project title:** Development of muon trigger algorithms for the Compact Muon Solenoid detector for the high luminosity phase of the Large Hadron Collider

**Project leader:** dr hab. Artur Kalinowski

**Unit name:** Warsaw University of Technology

**Number of positions:** 1

**Duration:** 45 months

**Starting date:** October, 1, 2022

**Salary:** 5000 gros gros (about 4200 PLN gros, about 3700 PLN net) monthly

The scholarship is awarded in accordance with the rules contained in the Regulations on granting scientific scholarships in research projects financed by the National Science Center, introduced by the resolution of the Council of the National Science Center No. 25/2019 on March 14, 2019.

**Project description:** The Warsaw group of the [CMS experiment](#) seeks a person for a Ph.D. student position at the Warsaw University of Technology, Faculty of Electronics and Information Technology to join the group's activities on [Level-1 \(L1\) muon trigger](#). The CMS experiment analyses data from proton-proton collisions from the Large Hadron Collider (LHC) at CERN, Geneva. The Warsaw CMS group built, commissioned and operates one of three subsystems of the L1 muon trigger of the CMS experiment. The L1 trigger uses algorithms implemented in (programmable) electronics to select interesting events from proton-proton collisions at the LHC. The CMS detector is being [upgraded](#) to cope with increased intensity of collisions at the LHC. The Warsaw group has responsibility for upgrading parts of the L1 muon trigger. The CMS detector upgrade is planned to finish in 2028.

The successful applicant is expected to make a significant contribution to the implementation of the new L1 algorithms exploiting Machine Learning. Also the applicant will be responsible for preparations for operation and tests of the upgraded L1 trigger system.

The successful applicant will be enrolled at the Warsaw University of Technology [Doctoral School](#) and will be obliged to follow its [programme](#) of studies, and will have teaching duties of 120 teaching hours over a period of four years.

**Main tasks:**

- implementation and testing of new algorithms on programmable electronic devices
- operation of the existing, and new L1 trigger systems, including shift during the CMS detector operation

**Requirements:**

- the candidate should have the status of a Ph. D. student before the project starts
- the candidate must be accepted by the Doctoral School before the project starts. He/she will have to pass the official [recruitment](#) to the Doctoral School as additional step before signing the stipend agreement
- education background allowing to follow courses of the Doctoral School
- M.Sc. or equivalent in electronics, telecommunications or related field
- programming skills in VHDL
- experience in work with electronics
- experience of work in a big experimental collaboration and experience in data analysis in high energy physics would be bonuses

**Required documents:**

1. a scan of signed cover letter including consent of personal data processing: “I hereby give consent to process my personal data included in the offer, for the purposes of the recruitment procedure, in accordance with the Personal Data Protection Act dated 29.08.1997 (Consolidated text: Journal of Laws of the Republic of Poland, 2016, item 922, as amended).”
2. CV with information on the research activity, achievements and awards as well as scientific interests
3. a list of conference presentations and publications including internal experiment notes where candidate had important contributions
4. at least one recommendation letter to be send by the Author directly to [wojciech.zabolotny@pw.edu.pl](mailto:wojciech.zabolotny@pw.edu.pl) (with text “[PROJ]” at the beginning of the subject of the e-mail)

5. master diploma scan. In case of positive application outcome a sworn translation of diplomas issued in languages other than Polish or English would be required. Candidates holding diplomas issued by countries outside EU, EFTA and states signing Convention on the Recognition of Qualifications concerning Higher Education in the European Region should provide a certification of their diploma in Poland. More details can be found here:

<https://nawa.gov.pl/en/recognition/recognition-for-academic-purposes/applying-for-admission-to-doctoral-studies>

**We offer:**

- work in an experienced team
- stable financing, during the whole period of doctoral studies (small reduction of the salary may be expected in the missing last three months covered by the standard subvention for PhD students).
- position based in Warsaw with frequent trips to CERN, Geneva

**Deadline for submitting documents:** June 28, 2022

**Application submission form:** via e-mail to [wojciech.zabolotny@pw.edu.pl](mailto:wojciech.zabolotny@pw.edu.pl) (with text “[PROJ]” at the beginning of the subject of the e-mail)

Selected candidates will be asked for a remote interview. The recruitment procedure will be finished before July, 16, 2022. In the event of the resignation of the selected candidate, the right to indicate the next candidate from the ranking list is reserved.

Final recruitment depends both on successful selection for the NCN OPUS 22 project and for the WUT Doctoral School "

For further information, please contact Wojciech Zabołotny, [wojciech.zabolotny@pw.edu.pl](mailto:wojciech.zabolotny@pw.edu.pl) (with text “[PROJ]” at the beginning of the subject of the e-mail)