

Job ID: HEPHY045DOC222

The Institute of High Energy Physics ([HEPHY](#)) of the Austrian Academy of Sciences ([OeAW](#)), Austria's leading non-university institution for science and research, performs a rich experimental particle physics program and is participating in accelerator- and non-accelerator-based experiments. The institute has major involvements in CMS at CERN, the Belle II experiment at KEK and several Dark Matter detection experiments. An active theory group completes the research profile of the institute. Now HEPHY is offering two

**PHD STUDENT POSITIONS (F\*M)**  
*for Physics Analysis with the CMS experiment*  
(30 hours per week)

HEPHY is one of the founding members of the CMS Collaboration. We have been strongly involved in the design, construction and operation of two of the major components of the experiment: the trigger system and the tracking detector. Our experience in building silicon detectors, the construction of FPGA based hardware and development of the appropriate firmware allow us to play a leading role within the collaboration. HEPHY is contributing to the high-luminosity upgrade for two major components of CMS: the silicon tracker and the high granularity calorimeter. HEPHY has contributed to CMS physics results since the beginning of LHC operation. HEPHY groups are working on direct searches for supersymmetry and the dark sector, searches using displaced leptons, and on measurements involving the Higgs boson. One of our priorities is the measurement of properties of the top quark, where one focus is on precision measurements of top quark pair and for-top production. The Run 3 of the LHC will provide enough data to unambiguously discover this important process. In collaboration with teams focusing on the theoretical description of this process, we also aim at understanding the implications beyond the standard model of particle physics.

**Main tasks:**

- strengthening of our analysis activities with the CMS experiment, in particular, taking a key role in the area of physics of the top quark and the discovery of the four-top process
- interpretation of results in the context of SM effective field theory
- data analysis, including the improvement of existing and the development of novel analysis strategies with machine learning
- contributions to maintenance and development of the reconstruction and the calibration of physics objects

**Requirements:**

- Master in the field of experimental particle physics at the time of appointment
- an excellent research record and experience in performing analyses in a large international collaboration
- interest in part-time contributions to detector development is welcome but not a strict requirement
- good communication skills
- ability to work well in a team environment

**We offer:**

- interesting and diversified activities in a motivated team of physicists who cover a wide range of expertise from detector design and construction to theoretical physics
- being member of a large international collaboration, including participation in working meetings and conferences and interactions with other CMS teams
- The annual gross salary according to the salary scheme of the Austrian Science Fund ([FWF](#)) for this position is € 32.204,20.
- The position will be located in Vienna and opened for a period of three years

Please submit your application including a CV, a statement of research interests, and a list of publications via e-mail to [hephy-office@oeaw.ac.at](mailto:hephy-office@oeaw.ac.at), mentioning Job ID: HEPHY045DOC222, no later than **May 30, 2022**. Please also arrange for **two letters of recommendation** to be sent to the same address. For further information, please contact **Robert SCHÖFBECK** [robert.schoefbeck@oeaw.ac.at](mailto:robert.schoefbeck@oeaw.ac.at).

*The Austrian Academy of Sciences (OeAW) pursues a non-discriminatory employment policy and values equal opportunities, as well as diversity. Individuals from underrepresented groups are particularly encouraged to apply.*