

The Institute of High Energy Physics ([HEPHY](#)) of the Austrian Academy of Sciences in Vienna, Austria's leading non-university research and science institution, is offering a

PHD STUDENT POSITION (F*M)

(30 hours per week)

Extending the reach of LHC searches for New Physics in rare decays of the Higgs boson to dark sector particles using displaced dimuons with CMS

The Institute of High Energy Physics of the Austrian Academy of Sciences in Vienna, Austria, performs a rich experimental particle physics program participating in accelerator- and non-accelerator-based experiments. The institute has a major involvement in CMS at CERN and in the Belle II experiment at KEK. An experimental group works on direct Dark Matter detection using the CRESST experiment at LNGS. A theory group completes the research profile of the institute. 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. HEPHY is contributing to the high-luminosity upgrade plans 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. One of our priorities is the CMS data analysis, in particular measurements of properties of the Higgs boson, searches for supersymmetry and the dark sector, indirect searches using rare top quark production, and measurements of quarkonium production.

PhD Student Position

We are looking for outstanding applicants with a background in high energy physics to fill a PhD student position. The position is open to candidates of any nationality that hold a Masters degree in Physics (or equivalent). Successful candidates will be invited to carry out research within a PhD thesis project at Austria's largest center for experimental and theoretical particle physics. The working language is English.

The candidate will play a key role in a state-of-the-art search for dark sector particles with macroscopic lifetimes, such as long-lived dark photons, in rare decays of the Higgs boson or a new heavy scalar. The search will explore the signature of displaced muon pairs emerging from a common vertex in a wide range of displacements across the CMS detector using LHC Run III data. The candidate will join a team working on a related project with Run II data.

The main tasks will include the development of new trigger and data analysis strategies with the goal to maximally enlarge the reach of the search following the significant extension of CMS displaced muon trigger capabilities in Run III. The candidate is also expected to help with supervision of Master students.

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
- membership in the CMS collaboration, including participation in working meetings and interactions with other CMS teams
- a position located in Vienna for a period of three years with the possibility of regular travels to CERN, workshops, school, and (international) conferences
- an annual gross salary of € 30.878,40 according to the salary scheme of the Austrian Science Fund ([FWF](#))

Please submit your application including a CV, a letter of motivation and graded study records, the earliest date at which you could start your PhD studies, and two recommendation letters via email to **Alberto ESCALANTE DEL VALLE** (alberto.escalantedelvalle@oeaw.ac.at). Applications will be reviewed as they arrive until the position is filled. Please submit your application before **September 30, 2020**, mentioning Job ID: HEPHY079DOC220, to ensure full consideration.

For further information, please contact Alberto ESCALANTE DEL VALLE (alberto.escalantedelvalle@oeaw.ac.at) and Ivan MIKULEC (ivan.mikulec@oeaw.ac.at).

The Austrian Academy of Sciences (OeAW) pursues a non-discriminatory employment policy and values equal opportunities, as well as diversity. The OeAW lays special emphasis on increasing the number of women in senior and in academic positions. Given equal qualifications, preference will be given to female applicants.