

## Postdoctoral Researcher within the CMS Experiment



### Scientific environment

The Institute of High Energy Physics (HEPHY) 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 / Belle II experiment at KEK. A new experimental group working on direct Dark Matter detection is currently built up. A theory group completes the research profile of the institute.

### Involvement in CMS

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 based detectors, the construction of FPGA based hardware and development of the appropriate firmware together with our expertise in reconstruction algorithms and its implementation in software allow us to play a leading role within the collaboration.

### Contribution to the CMS upgrade at HEPHY

We are providing major contributions to the upgrade of the tracking system of CMS. Our main involvement will be in the development and production of silicon sensors and the associated detector modules as well as the development of algorithms for track reconstruction. Furthermore, we have recently joined the High Granularity Calorimeter (HGC) collaboration within CMS. We will contribute to the development and production of the silicon sensors for this new type of detector.

We work in close collaboration with a major European semiconductor manufacturer based in Austria. Together with our industrial partner we are currently developing silicon sensors for charged particle tracking. They are envisaged to be used in the CMS Tracker and the HGC as well as in other scientific experiments and in medical applications.

At the same time, the group is involved in several national and EU funded projects.

## What we are looking for:

HEPHY is looking for a postdoctoral researcher to join our silicon sensor development team. The successful applicant is expected to play a leading role in the sensor development for the HGC and shall support all hardware activities within the group. Key activities are:

- Active participation in working meetings of the HGC collaboration
- Design and simulation of the new HGC silicon sensors with our industrial partner
- Neutron irradiations at the TRIGA Mark II nuclear reactor in Vienna
- Development and construction of test setups for sensors
- Development of quality assurance strategies for the series production of sensors
- Supervision of Bachelor, Master and PhD students within the working group
- Contributions to the operations of the CMS experiment

Applicants shall have a PhD within the field of experimental particle physics. We expect in-depth experience with silicon particle detectors and a general understanding of electrical engineering and information technologies.

## What we have to offer:

- Interesting and diversified work embedded in a motivated team of experts
- Participation in the CMS experiment including full authorship of future CMS publication
- Regular working meetings at CERN and at collaborating institutes with the possibility of longer research visits
- Attendance of international conferences and schools
- Close collaboration with a major semiconductor company

## Additional Information

The remuneration follows the scheme of the Austrian Science Fund (FWF). The annual gross income (“Bruttojahresgehalt”) will be at least 49.644 €. The position will be located in Vienna and opened for a period of three years with the possibility of an extension.

The Austrian Academy of Sciences is committed to increase female employment in leading scientist positions. Qualified female applicants are encouraged to apply and will be given preference if equally qualified. Handicapped persons with appropriate qualifications are also expressly encouraged to apply.

## Application

Applications should include a CV and a list of publications. Applicants should arrange to have two recommendation letters. Recommendation letters as well as the application should be sent to Eveline Ess ([Eveline.Ess@oeaw.ac.at](mailto:Eveline.Ess@oeaw.ac.at)). The deadline is Jan. 31<sup>th</sup>, 2016, but applications will be considered beyond this date until the position is filled.

For further information, please contact Marko Dragicevic ([Marko.Dragicevic@oeaw.ac.at](mailto:Marko.Dragicevic@oeaw.ac.at)).