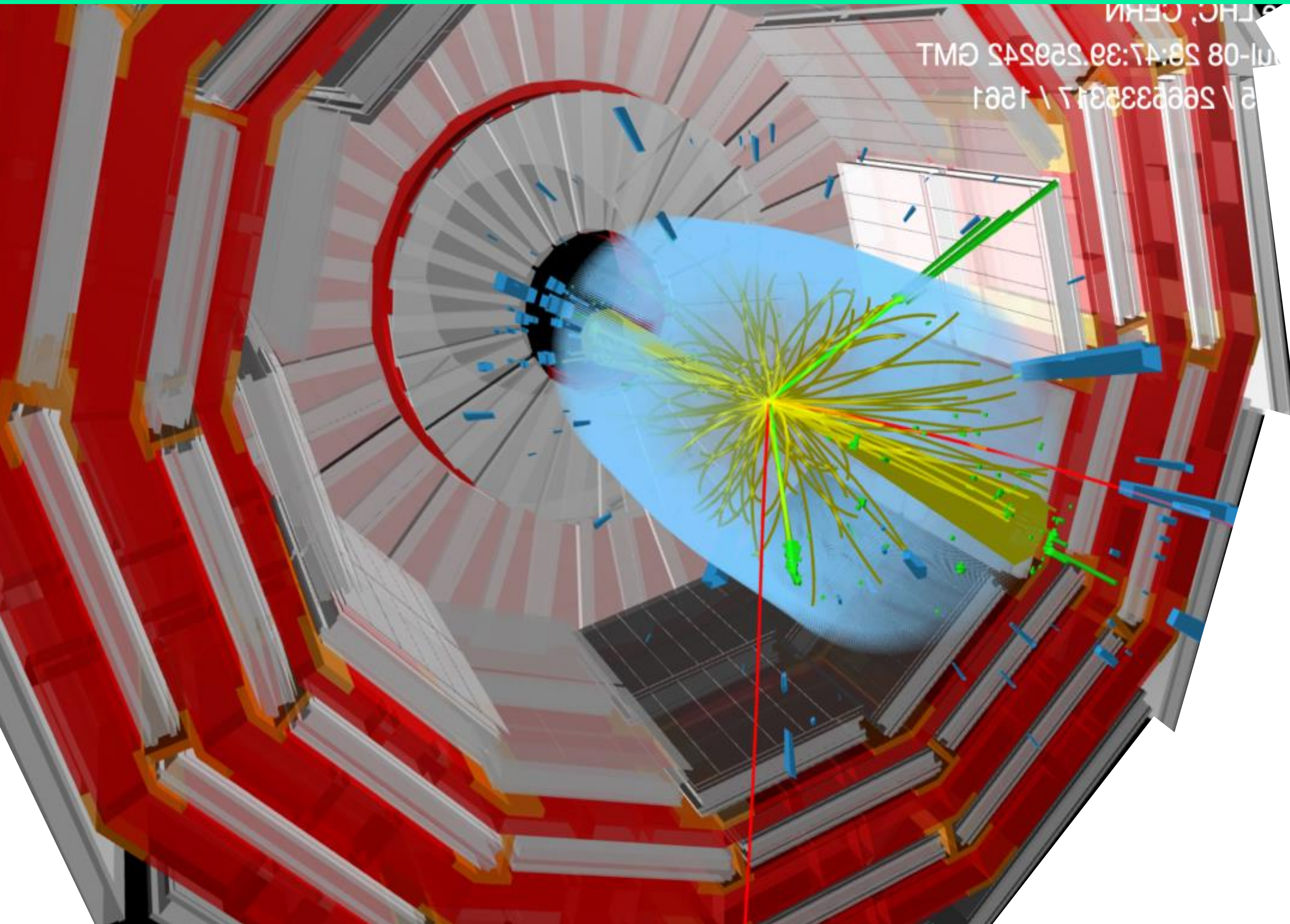


Experimental Particle Physics at CMS and beyond

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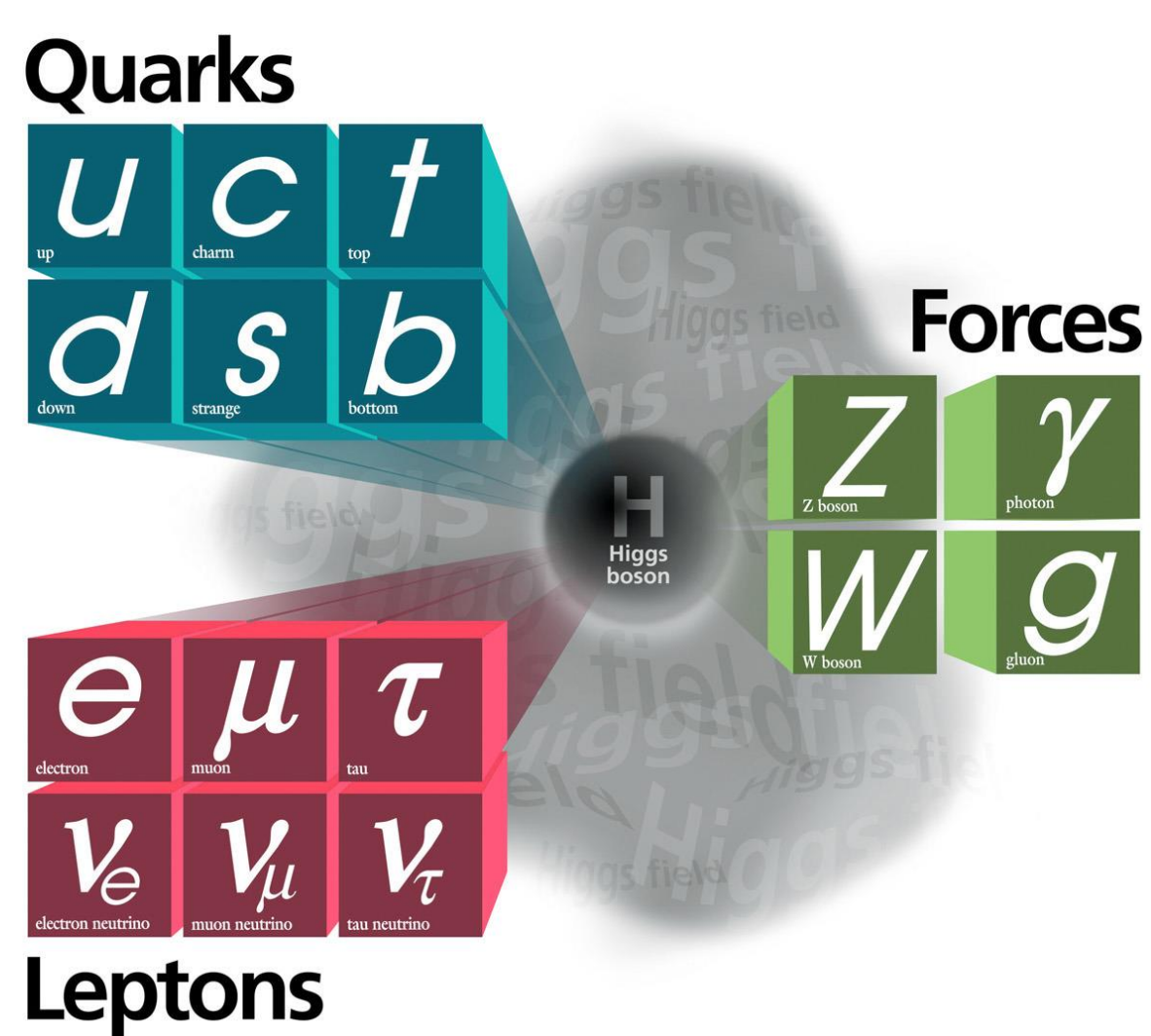
Our group

We are a team of scientists, students, engineers and technicians involved in different aspects of particle physics experiments. Our group performs research with the CMS experiment at the LHC and plays an active role in physics analysis, detector development and operation. We have conceived and built the CMS pixel detector, the innermost part of the CMS detector and are also working on detectors for future particle physics experiments.



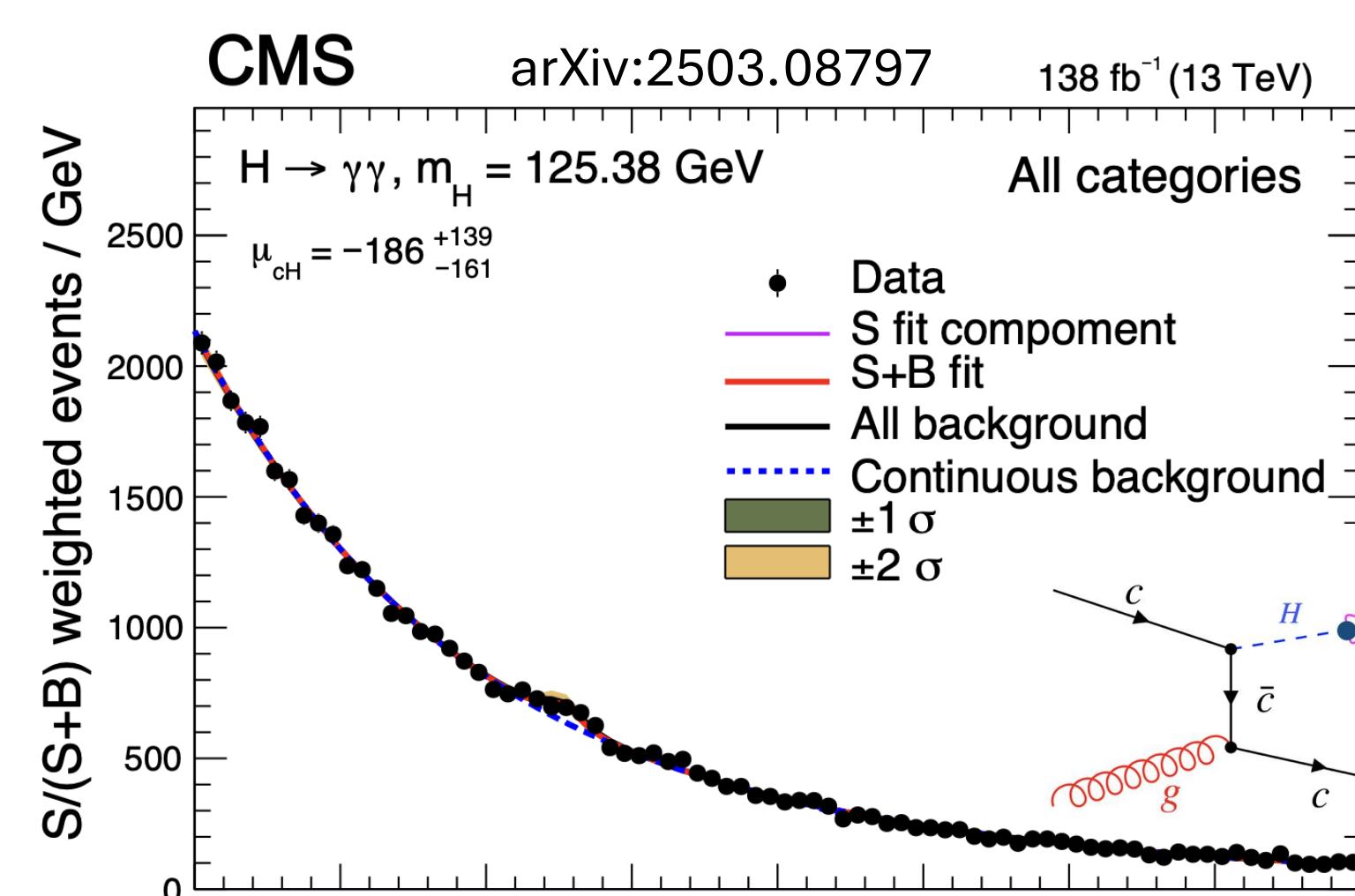
Particle physics

Our research interest lies in probing the most basic interactions in nature. This includes searches for yet undiscovered particles and phenomena in high-energy particle collisions as well as precision measurements of rare particle decays which might give hints to new physics beyond the standard model (SM) of particle physics.



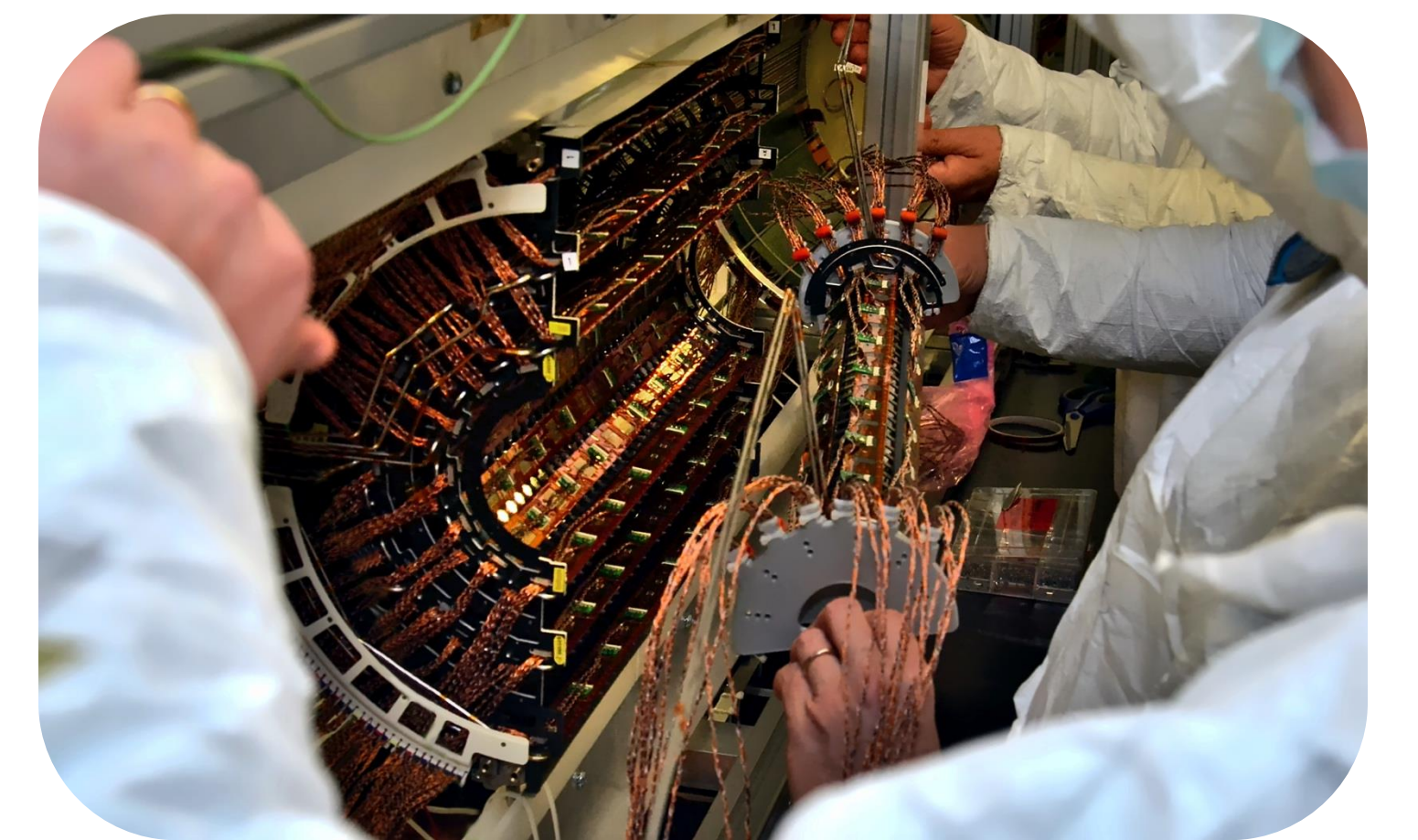
The Higgs boson at CMS

The Higgs boson is a unique particle in the SM. Using the collision data collected by CMS so far and looking forward to the significantly increased data set that is expected at HL-LHC, we challenge the SM by precision measurements of the properties of the Higgs boson. In particular we study its interaction with heavy quarks by searching for rare events of associated production (e.g. H+c-jet production).



Detector development

Pixel detectors deliver high-precision measurements for track and vertex reconstruction. The detector systems have to meet stringent requirements in terms of granularity, resolution, rate and radiation tolerance. Thus, technological innovation in the design of sensors, electronics and modules is needed. We develop and build pixel detector systems for CMS, particle physics experiments at PSI and beyond.



Research opportunities

We offer many different projects with a duration of 3-12 months – ranging from hands-on laboratory work with detectors to data analysis of complex experiments. You will get an insight into research work at modern experimental facilities and learn important skills such as programming, data handling, statistical tools, planning and carrying out systematic testing campaigns, electronics design and applications, and many more. Furthermore, you experience the work in an international collaboration and get the chance to explore the experimental facilities at PSI and at CERN. Get in touch for more information (lea.caminada@psi.ch)

