
# Lab and Workshop visits (13:00-16:00)

**AWAKE: Next-generation accelerators → Hauptgebäude**
Until now, very large accelerator facilities have been needed to accelerate particles to high energies. Scientists are exploring new methods to accelerate particles to nearly the speed of light as efficiently as possible over much shorter distances: AWAKE uses plasma waves on which the electrons surf and are thus brought up to speed.

**ATLAS data analysis: Hunting particles with the Higgs detection machine → Experimentierhalle EG**
At the LHC, protons are collided at nearly the speed of light and at immensely high energies. We show how we analyse the results of these collisions with the ATLAS detector. Our goal is to explore the physics we know even more precisely - and to find new particles that can be used to explain phenomena that are not yet understood.

**ATLAS muon detector: A giant under construction to-a-hair precision → Experimentierhalle EG**
To increase the chances of detecting new particles, the LHC is being upgraded to further peak performance. This also applies to the ATLAS instruments. The detectors for muons, heavy relatives of electrons, play a special role here. We will show how these technologies are being refined and constructed to deliver even more precise results.

**COSINUS: Intelligent detector crystals → Hauptgebäude**
So far, only one experiment has succeeded in picking up a signal from dark matter. The new COSINUS experiment is expected to provide some clarification: Using a "smart" detector developed at MPP, scientists are following the trail of this lonely sign of dark matter.

**CRESST: Dark matter search → Hauptgebäude**
It has been known for many years that there must be matter in the universe that cannot be seen. Just like ordinary, visible matter, it attracts mass. In this way, dark matter holds galaxies together - and dictates how they are distributed in the universe. As one of several experiments, CRESST is searching for the hitherto unknown particles of dark matter – with low temperatures playing a crucial role.

**KATRIN and its detectors: Neutrino mass ... and more → Hauptgebäude**
To measure the mass of what are probably the lightest particles - neutrinos - you need the world's largest balance: KATRIN in Karlsruhe. But the experiment can do even more. The additionally installed TRISTAN detector searches for a new neutrino species. And that's not all: In a few years, TRISTAN will even go to the ISS space station to capture high-energy light particles.

**Apprentice Workshop: Training by fascinating projects → Werkstätten**
Perhaps not known to everyone - but at MPP there is more than just research: Young people can learn a profession here. At the open day, our apprentices in the field of industrial mechanics show their exciting projects.

**MADMAX: Sensitive electronics for the detection of axions → Experimentierhalle OG**
The MADMAX experiment is about the axion. The elementary particle exists in theoretical models, but has not yet been detected. Axions could help to remove some inconsistencies in particle physics. For example, it is a possible candidate for dark matter. We show the idea behind the experiment - and how axions can be measured.

**MAGIC and CTA: Telescopes on La Palma → Hauptgebäude**
Telescopes are the most important "visual aids" for the universe. They allow scientists to study different wavelengths of light, for example optical light, infrared or radio waves. The MAGIC and CTA telescopes focus on the most energetic radiation: gamma rays. They reveal what happens in stellar explosions and at black holes and allow a deep look into the past of our 13-billion-year-old universe.

**Mechanics and Construction: From idea to experiment → Werkstätten**
Every experiment in particle physics is unique. Our mechanics department shows how to plan, design and finally manufacture and assemble new experiments.