Werner Joho

The Accelerator Facilities at the Paul Scherrer Institute PSI

in Villigen, Switzerland

Particle Accelerators are important tools in exploring different fields in natural sciences. With the highest particle energy so far reached, the so-called Higgs boson was found in 2012 at CERN in Geneva. On the other hand, four accelerators at the Paul Scherrer Institute in Switzerland contribute to new knowledge in a variety of scientific topics. A proton cyclotron with a world record of 1.4 MW in beam power, produces pions, muons and neutrons to investigate the properties of atoms as well as large and small objects. Protons from another cyclotron are used to irradiate eye tumours and deep seated tumours with unprecedented precision. Over the last 22 years more than 8'000 patients have been treated. Two high-energy electron accelerators produce laser-like X-rays, which are used in materials science. These X-rays can be focused to a spot smaller than the diameter of a hair. They are used to investigate e.g. the structure of protein molecules, which make up the building blocks of new medical drugs. With the new Swiss Free Electron Laser facility (SwissFEL) one can observe the movement of molecules in a chemical reaction, thanks to the extremely short X-ray pulses.

The Accelerators at PSI are

Ringcyclotron	protons	590 MeV	since 1974
Cyclotron Comet	protons	250 MeV	since 2007
SLS Storage Ring	electrons	2.4 GeV	since 2000
SwissFEL	electrons	6 GeV	since 2016

These accelerators are used by researchers all over the world in the field of

- matter and materials
- energy and environment
- human health


Ringcyclotron

9 783752 847116

BoD BOOKS on DEMAND

www.bod.de