

MAX IV – introductory level

Storage ring (ca 500 m in circumference)

Stores electrons, which have been accelerated in the linear accelerator, in a vacuum tube. The electrons are bent around the storage ring by magnets. When the electrons turn in the magnets they emit light. (similar to how the current in an antenna emits radio waves.)

Short pulse facility

Extremely short light flashes can be produced here by using the electrons directly from the linear accelerator.

Free Electron Laser
MAX IV is prepared to be expanded with a laser like light source in the future.

1.5 GeV Ring

Beamline

The light that is produced by the electrons shines through the beamline to the experimental station. In the beamline one can choose which colour (wavelength) of the light to use and focus it on the sample to analyse. Some of the beamlines will need to be longer to reach higher performance.

Linear accelerator (ca 250 m long)

Experimental station

At the end of the beamline sits the experimental station. Each station is specialised to a specific science area. Here the sample is mounted and one measures what happens when it is illuminated by synchrotron radiation.

Electron gun

In the electron source all electrons used in the facility are extracted from a piece of metal (copper or tungsten). (a similar technique to the gun that fits into a traditional thick-TV-set)

Radiation

The electrons in the accelerator create a small amount of radiation when the machine is operated. When the machine is switched off there is no remaining radiation as no radioactive materials are produced. If something goes wrong the first thing to happen is that the machine stops. The accelerator itself is built into concrete and thus one can work freely in all other areas of the laboratory.

