

PSI-XFEL RF-System

Thursday 27 March 2008 14:40 (40 minutes)

The X-ray Free Electron Laser (XFEL) is a new development in laser and accelerator-technology intended to introduce the excellent characteristics of conventional laser systems into the x-ray spectral region.

The XFEL is labeled the next or 4th generation light source after the current state of the art 3rd generation light source like the Swiss Light Source (SLS).

The commissioning of the High Voltage Pulser started in September 2007. The Pulser will accelerate the electrons emitted from a photocathode or a field emitter across a gap to the energy of 500 keV.

In phase 1 the generation of electrons is done by photoemission with a laser.

In phase 2 which already started, the installation of a 1.5 GHz two-cell cavity and an upgrade of the Pulser from 500KV to 1.MV is planned.

The Modulator for the 1.5 GHz / 20MW System is installed and tested with the klystron in diode-mode.

Further we plan to replace the two-cell cavity with a two-frequency standing wave cavity which works at 1.5 GHz and 4.5 GHz simultaneously.

A second modulator to supply the 4.5 GHz at 4 MW has already been ordered.

The concept of the RF-System for the XFEL and an overview of the current state at the test stand will be presented.

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