European XFEL
A New User Facility for Fundamental Science on ultra short timescales.

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Hard X-ray Free Electron (XFEL) lasers provide extremely intense and ultra-short X-ray pulses that are ideal to investigate structure and dynamics of matter at very short time scales. X-ray free electron lasers have been in operation for 10 years now and have had wide range of areas of applications in physics, chemistry, materials and structural biology.

European XFEL is the most recent large scale research infra structure in Europe and was taken into user operation in September 2017. The facility is an intergovernmental organization with 12 member states (including Hungary) and serves the European user community by providing the possibility for performing new classes of experiments to investigate the structure and dynamics of matter on the atomic length and time scales. The facility includes a 3.5 km long from DESY in Hamburg/Bahrenfeld to Schenefeld in Schleswig-Holstein where the experimental hall is placed. In the tunnel a 2 km long superconducting accelerator is placed. In the experimental hall six instruments are located each offering a portfolio of scientific opportunities. The first two experimental stations have been in operation doing user experiments for three years, the last four instruments have been taken into user operation within the last two years. In the talk the basic principles of European X-FEL will be discussed and results of some of the first experiments will be shown. Also the opportunities for how to engage with European XFEL will be addressed.