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The European XFEL Facility

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The European X-Ray Free-Electron Laser Facility (European XFEL) is an X-ray research laser facility commissioned during 2017. The first laser pulses were produced in May 2017[2][3] and the facility started user operation in September 2017.[4] The international project with twelve participating countries; nine shareholders at the time of commissioning (Denmark, France, Germany, Hungary, Poland, Russia, Slovakia, Sweden and Switzerland), later joined by three other partners (Italy, Spain and the United Kingdom),[5][6] is located in the German federal states of Hamburg and Schleswig-Holstein.[7] A free-electron laser generates high-intensity electromagnetic radiation by accelerating electrons to relativistic speeds and directing them through special magnetic structures. The European XFEL is constructed such that the electrons produce X-ray light in synchronisation, resulting in high-intensity X-ray pulses with the properties of laser light and at intensities much brighter than those produced by conventional synchrotron light sources.

The 3.4 km long European XFEL generates extremely intense X-ray flashes used by researchers from all over the world. The flashes are produced in underground tunnels and allow scientists to map atomic details of viruses, film chemical reactions, and study processes in the interior of planets.

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