Inauguration of the Helmholtz International Beamline for Extreme Fields (HIBEF) at the European XFEL

01.09.2021

Christian Luft, State Secretary at the Federal Ministry of Education and Research, the Minister of Science of Schleswig-Holstein, Karin Prien, and the State Councillor for Science, Research, Equality and Districts of the Free and Hanseatic City of Hamburg, Dr. Eva Gümbel, inaugurated the Helmholtz International Beamline for Extreme Fields (HIBEF) at the European XFEL in Schenefeld near Hamburg on August 31, 2021. The goal of HIBEF is to set up and operate various experiments with ultrashort and extremely bright X-ray flashes that are unique worldwide.

Under the leadership of the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) in cooperation with the Deutsches Elektronen-Synchrotron (DESY), the HIBEF consortium bundles equipment and expertise from various research institutions to make them available to the international scientific community. The beamline is part of the High Energy Density (HED) experimental station of the X-ray laser European XFEL and enables deep insights into the structure of materials and into very fast natural processes of plasma physics. Researchers can use it, for example, to improve models of planet formation and simulate processes in plasmas, thus driving innovations in materials and accelerator research.

The beamline was founded in 2013 by DESY and HZDR. Participating in the HIBEF user consortium are more than 350 scientists at 60 research institutions in 16 countries, such as the UK Science and Technology Facilities Council (STFC). The total investment, including operating costs for ten years, is just under EUR 120 million.

State Secretary Christian Luft described HIBEF as a pioneering investment in the future:

> *"Excellent research requires excellent infrastructures. In an international collaboration, HIBEF at the European XFEL is an experimental station with unique possibilities worldwide, ranging from basic research on new materials to new insights into planets. This further strengthens our international leadership in Europe in the field of research with X-rays."*

HIBEF combines the X-ray radiation of the European XFEL with two superlasers, a powerful magnetic coil and a platform for research with diamond stamp cells. The world's most intense X-ray flashes can twitch 27,000 times per second in Schenefeld. They are generated in the underground, 3.4-kilometer-long X-ray laser by electrons, which a superconducting particle accelerator accelerates to almost the speed of light. The two lasers, developed by the STFC in the United Kingdom and the HZDR, provide high-energy light to generate extreme states, such as those found inside planets. There is nothing comparable to this combination of extreme experimental conditions with the intense X-ray pulses of the European XFEL anywhere in the world.

Prof. Robert Feidenhans'l, Chairman of the European XFEL Executive Board, adds:

> *"We are very pleased that we can now offer further exciting research opportunities to HIBEF researchers from all over the world with our experimental station HED. In 2021, 9 experiments with research groups from 59 institutions are planned at the HED experiment station, and we are very excited to see the first results. I thank the HIBEF consortium for the excellent and successful collaboration, which we would like to further expand in the coming years."*

About European XFEL

European XFEL is a superlative international research facility in the Hamburg metropolitan region: 27,000 X-ray laser flashes per second and a luminosity a billion times higher than the best conventional X-ray radiation sources will open up completely new research opportunities. Research groups from all over the world will be able to use the European X-ray laser to decode atomic details of viruses and cells, take three-dimensional images in the nanocosmos, film chemical reactions and study processes such as those inside planets.

European XFEL is a non-profit research organization that works closely with the research center DESY and other international institutions. It employs more than 450 people, and the facility began user operations in September 2017. Twelve countries are currently participating: Denmark, France, Germany, Hungary, Italy, Poland, Russia, Slovakia, Spain, Sweden, Switzerland and the United Kingdom. Germany (Federal Ministry of Education and Research and the states of Hamburg and Schleswig-Holstein) is contributing 58 percent of the cost of the new facility, Russia 27 percent. The other partner countries are contributing one to three percent.

To read

- European XFEL GmbH (31.08.2021): Extreme conditions in the lab

Quelle: European XFEL GmbH via IDW Nachrichten

Redaktion: 01.09.2021 von Sarafina Yamoah, VDI Technologiezentrum GmbH

Länder / Organisationen: Dänemark, Deutschland, Frankreich, Italien, Polen, Russland, Schweden, Schweiz, Slowakei, Spanien, Ungarn, Vereinigtes Königreich (Großbritannien)

Themen: Grundlagenforschung, Infrastruktur, Physik. u. chem. Techn.

Zurück

Weitere Informationen