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Current events

1. Superconducting LINAC for the European XFEL operational

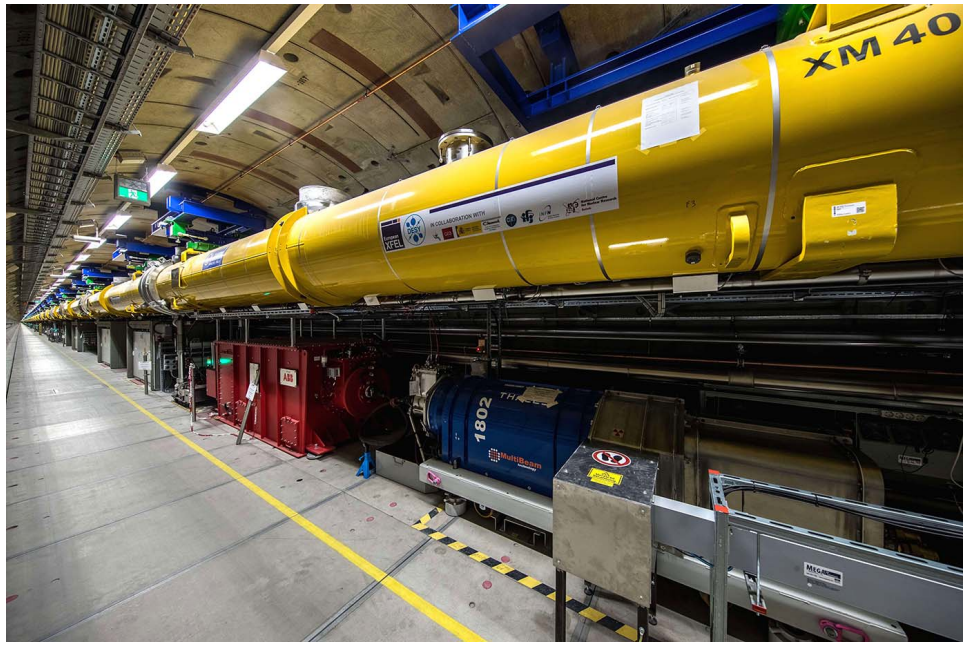
The European XFEL has reached one of its final major milestones on the way to user operation. DESY has successfully commissioned the particle accelerator that drives the X-ray laser.

Accelerated electrons have passed through the complete 2.1 km length of the accelerator tunnel. In the next step, the energy of the electrons will be raised further, before being sent into the undulator section where the X-ray laser radiation will be generated. First lasing is planned for May 2017. DESY is the largest shareholder of the European XFEL and is responsible for the construction and operation of the superconducting linear accelerator.

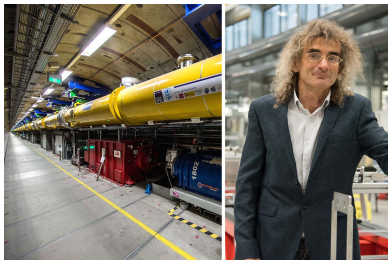
"The European XFEL's particle accelerator is the first superconducting linear accelerator of this size in the world to go into operation. With the commissioning of this complex machine, DESY and European XFEL scientists have placed the crown on their 20-year engagement in developing and building this large international project. The first experiments are within reach, and I am quite excited about the discoveries ahead of us", said Helmut Dosch, Chairman of the DESY Board of Directors. "I am exceptionally happy about arriving at this milestone and congratulate all involved for the outstanding work and their great tenacity."

The chairman of the European XFEL Management Board, Robert Feidenhans'l, said: "The successful commissioning of the accelerator is a very important step that brings us much closer to the start of user operation in the fall of 2017. Under the leadership of DESY, the Accelerator Consortium, comprising 17 research institutes, has done an excellent job in the last years. I thank all colleagues involved for their work, which entailed a great deal of know-how and precision but also much personal commitment. The accelerator is an outstanding example of successful global cooperation, encompassing research facilities, institutes and universities alongside companies that produced certain components."

The European XFEL will produce up to 27000 X-ray laser flashes per second, each so short and intense that researchers can image structures and processes down to atomic



View into the 2.1 km-long accelerator tunnel of the European XFEL with the yellow superconducting accelerator modules hanging from the ceiling (Photograph courtesy of D. Nölle, DESY.)



length scales. The superconducting particle accelerator, which is now operational, is the key component of the 3.4 km-long X-ray laser. The accelerator's superconducting TESLA technology, which was developed in an international collaboration led by DESY, is the basis for the high rate of X-ray laser flashes. From December 2016 until January 2017 the accelerator was cooled to its operating temperature of −271°C. The electron injector and first section of the main accelerator then went into operation, comprising altogether 18 of 98 total accelerator modules. Within this section, the electron bunches were both accelerated and compressed three times, down to 10 µm. Finally, the team put the third section of the accelerator into operation. Currently, the electrons reach an energy of 12 GeV, and in regular operation an energy of up to 17.5 GeV is planned.

"The energy and other properties of the electron bunches are already within the range where they will be during first user operation", said DESY physicist Winfried Decking, who is leading the commissioning of the European XFEL accelerator.

The particle accelerator has been constructed by an international consortium led by DESY with the following additional members: CEA and CNRS in France; INFN in Italy; IFJ-PAN, NCBJ and Wrocław University of Technology in Poland; the Budker Institute, the Institute for High Energy Physics, the Institute for Nuclear Research and NIIEFA in Russia; CIEMAT and Universidad Politécnica de Madrid in Spain; the Manne Siegbahn Laboratory, Stockholm University, and Uppsala University in Sweden; and the Paul Scherrer Institute in Switzerland.

2. India Joins the ESRF

On 3 April 2017, the Department of Bio-Technology (DBT) of the government of India and the ESRF signed a three-year arrangement for the medium-term use of ESRF's facilities by Indian scientists for non-proprietary research in primarily structural biology. At the signing ceremony the DBT was represented by the Regional Centre for Biotechnology of India. With this agreement, India is the 22nd country joining the ESRF, with a level of participation of 0.66%. Collaboration between the ESRF and the Indian scientific community in the field of synchrotron radiation has been increasing steadily during recent years. An important milestone in this respect was the signing of a Memorandum of Understanding (MoU) between the ESRF and the National Institute of Immunology (NII) in December 2009. This MoU allowed for closer collaboration between the ESRF and the Indian macromolecular crystallography community interested in the use of synchrotron light, notably *via* a contribution to the management and operation of the ESRF beamline BM14 by the NII in collaboration with the European Molecular Biology Laboratory since January 2010.

3. Dr Pantaleo Raimondi winner of the Gersh Budker Prize 2017

The European Physical Society Accelerator Group (EPS-AG) has awarded the ESRF's Accelerator and Source Director, Dr Pantaleo Raimondi, the 2017 Gersh Budker Prize for his 'invention of the hybrid multi-bend achromat (HMBA) lattice ... which has become the design basis of most future fourth-generation synchrotron sources'. Awarded once every two to three years, the prestigious Gersh Budker Prize recognizes a recent, significant, original contribution to the accelerator field. The prize will be awarded on 18 May 2017 during the International Particle Accelerator Conference, IPAC'17, in Copenhagen, Denmark.

According to the EPS-AG, the HMBA lattice "shows Raimondi's ability to foster new ideas, his deep understanding of accelerator physics and mastering of technological aspects. ... The HMBA-lattice has been adopted as the basis for the design for most future fourth-generation storage ring light sources such as: the Advanced Photon Source upgrade at Argonne National Laboratory and the Advanced Light Source Upgrade at Berkeley Laboratory in the USA (APS-U and ALS-U); SPring-8-2 at the Japan Synchrotron Radiation Research Institute; and the Shanghai Synchrotron Radiation Facility and the Beijing Synchrotron Radiation Facility in China (SSRF and IHEP)".

Pantaleo Raimondi. (Photograph courtesy of C. Argoud, ESRF.)