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The Upgrade of the ESRF: The next step in the development of storage ring based X-ray sources.

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Abstract content

The European Synchrotron Radiation Facility is Europe's premier hard X-ray synchrotron radiation source providing 45 experimental stations for scientists from its member and associate countries. The facility is currently engaged in an ambitious upgrade program (2009-2022) covering all aspects of the facility: photon production, experimental facilities for users, user service, and X-ray technology development. The upgrade benefits all areas of X-ray applications: Imaging, Spectroscopy, and Diffraction. By the end of 2015 19 new or upgraded beamlines (Phase I of the upgrade program) provide new opportunities for the study of materials with probing beams down to the nanometer scale. Selected examples will be used to demonstrate first results from the ongoing upgrade. In parallel we have started work on Phase II of the upgrade program focusing on a major upgrade of the storage ring with the goal to reduce the horizontal emittance by at least a factor of 40. This will create the first low emittance, high energy storage ring with unprecedented performance. The associated linear increase in brilliance and coherence caters for new applications of X-rays for the study of soft and hard condensed matter. Current planning aims for a start of operations of the new storage ring in 2020.

Summary

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