

The H2020 CompactLight Design Study

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CompactLight (XLS) is an H2020 Design Study funded by the Horizon 2020 Research Program and carried out by an International Collaboration of 26 partners and 5 third parties, including CERN, INFN, Elettra, and UKRI. The project, which started in January 2018 with a duration of 48 months, aimed at designing an innovative, compact, and cost-effective hard X-ray FEL facility complemented by a soft X-ray source. In December 2021, the CompactLight Conceptual Design Report was completed. The result is an accelerator that can be operated up to 1 kHz repetition rate, beyond today's state of the art, using the latest concepts for high brightness electron photoinjectors, very high gradient accelerating structures in X-band, and novel short period undulators. This paper gives an overview of the project, focusing on the addressed technological challenges and the future applications.

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