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Status of the DELTA synchrotron light source

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DELTA, a 1,5 GeV electron storage ring facility operated by the TU Dortmund University in Germany celebrated its 30th anniversary in autumn 2024. During its time in operation, the facility has been continuously developed in order to provide synchrotron radiation (SR) users with the most reliable and attractive radiation source possible. This includes the continuous improvement of electron beam stability and lifetime, the installation of a new 7 T superconducting wiggler magnet (SCW) with a specially adapted SR output chamber as well as the integration of a second solid-state amplifier-driven RF system. There have also been many exciting developments in the field of accelerator physics in recent years. In addition to the construction of a facility for generating ultra-short and coherent SR pulses, studies with laser-induced terahertz radiation and experiments in the single-electron mode have complemented the research activities. Furthermore, projects on intelligent system control applying machine learning (ML) methods were successfully implemented. This report summarizes the most important developments of the last years.

Footnotes

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