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Commissioning and First Operation of SLS 2.0, the Upgrade of the Swiss Light Source

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After more than 20 years of successful operation, the storage ring of the Swiss Light Source (SLS) has recently been replaced with a new diffraction-limited storage ring (DLSR) called SLS 2.0. After a dark time of 15 months from October 2023 until December 2024, SLS 2.0 now provides more than 40 times higher brilliance for hard X-ray users, thanks to an innovative compact 7-bend achromat magnet lattice with reverse bending magnets that fits into the old SLS 1.0 tunnel. In this contribution, we give an overview of the commissioning of the new storage ring and first user operation experience, highlighting key differences between SLS 1.0 and 2.0, as well as the role and usage of different beam instrumentation systems during the commissioning process from the operations perspective. Moreover, we present the status of beam based feedbacks systems, and the resulting beam stability and performance that has been achieve so far during first user operation. This includes an orbit stability analysis using frequency-resolved principal component analysis (FPCA), comparing beam measurements with pre-beam vibration measurements and stability simulations.

Footnotes

Funding Agency

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Yes

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