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SLS 2.0 storage ring commissioning

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The SLS consists of a 100MeV linac, a 2.7GeV booster synchrotron with 9nm horizontal emittance and the storage ring (SR). The old 12-TBA SR with 5nm horizontal emittance operating at 2.4GeV was turned off in 09/2023 after 22 years of successful user operation. In course of the SLS 2.0 upgrade project the 288m circumference SR has been replaced by a 2.7GeV 12-fold 7-bend achromat lattice with a considerably reduced horizontal emittance of 150pm, while keeping the injector complex mostly unchanged. After recommissioning of the injector chain at the end of 2024 SR commissioning starts in January 2025 with some challenges ahead. A reverse bend design has been implemented to achieve the lowest possible emittance with the given small footprint of the SR leading to a very dense magnet arrangement. All bending and combined function magnets which largely determine the novel optics are permanent magnets which will guide the beam through NEG coated vacuum tubes with an aperture of only 18mm. Due to excellent beam diagnostics and optics adjustment capabilities combined with an advanced remote girder alignment system we expect to achieve the performance goals of the storage ring by mid 2025.

Footnotes

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Region represented

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Author: BÖGE, Michael (Paul Scherrer Institute)

Presenter: BÖGE, Michael (Paul Scherrer Institute)

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