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## Overview of the collective effects in SLS 2.0

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The Swiss Light Source (SLS) will shut down in October 2023, entering the dark time period for installation of the upgraded SLS 2.0 synchrotron. The commissioning of the new electron storage ring is planned for early 2025. The upgraded storage ring features a lattice based on modern 7-bend achromats with lower momentum compaction factor, NEG coated vacuum pipes of smaller aperture and an increased beam-energy from 2.4 GeV to 2.7 GeV.

To guarantee full performance, a careful analysis of the effects induced by the machine broadband and geometrical impedances and ions is mandatory. In addition to the potential well distortion due to the wake fields, the analysis must also include the transient beam-loading effects on the bunch lengthening of the passive superconducting harmonic cavity.

We provide an overview of the collective effects studied for SLS 2.0, including single bunch instabilities from the broadband impedance budget, coupled bunch analysis and ion effects. For each kind of such instabilities, the main threshold curves are presented, as well as the related safety margins of operation and the tracking procedures followed.

### Funding Agency

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

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