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Feasibility of round beams in SLS 2.0

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Sharing of emittances between transverse planes has potential benefits in storage ring light sources. The larger vertical emittance significantly increases the Touschek lifetime, while the smaller horizontal emittance helps to mitigate the loss in brightness at high photon energies due to the larger vertical beam size and divergence. A fully coupled beam is considered as an optional operation mode for the SLS 2.0, should a longer beam lifetime be required.

In this paper, we investigate the feasibility of having round beams in SLS 2.0 by operating on the linear difference resonance. We analyze the impact on the linear- and nonlinear performance of the machine, in particular the impact on Touschek lifetime when all apertures are included.

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Footnotes

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Yes

Primary author: KALLESTRUP, Jonas (Paul Scherrer Institut)

Presenter: KALLESTRUP, Jonas (Paul Scherrer Institut)

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