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Extremum seeking for accelerator optimisation

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A new collaboration between ESRF and DESY within the EURIZON project is aiming at building tools and concepts that can be used for the next generation light sources. The developed tools will be applied to the ESRF-EBS and the PETRA IV lattice models to validate concepts to improve the injection efficiency or the lifetime of storage rings.

In this project framework, the bounded Extremum Seeking (ES) algorithm is being studied as a Touschek lifetime optimization procedure. This contribution presents the tests performed on the ESRF-EBS electron beam where several sextupole and skew quadrupole knobs were tuned at the same time for vertical emittance minimization first and subsequently lifetime maximization.

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Footnotes

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Yes

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