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Commissioning simulations tools based on python Accelerator Toolbox

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Storage ring commissioning-like simulations are necessary to assess the feasibility of proposed future lattice designs. This paper proposes a python package for commissioning-like simulations based on python accelerator toolbox (pyAT). The software includes: 1) errors definition, 2) correction routines from open trajectory to optics and coupling correction and 3) the evaluation of the relevant parameters, such as dynamic aperture, injection efficiency and Touschek lifetime. The software is fully exploiting parallel resources (local or on a computing cluster) and is thought to be easily configured for any machine (examples are given for EBS DBA and HMBA, for PETRA IV and for FCC-ee). Whenever possible analytic formulas are made available to the user. Several examples are detailed in this paper and included in the code as demonstrations of use.

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Footnotes

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