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Status of the CERN optics measurement and correction analysis tools

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With a change in the LHC machine optics foreseen for 2025 and the possible reduction of beta-star, optics commissioning will become even more of a challenge for the CERN Optics Measurement and Correction (OMC) team. In particular, the increased sensitivity of the optics to non-linear imperfections, requiring a plethora of accurate measurements, is expected to be a time consuming task. In preparation, continuous effort has been undertaken to develop new correction strategies and convert them into ready-to-use algorithms, allowing the automation of repetitive tasks while keeping the python-base software tools up-to-date. In this paper the status of these tools is summarized with highlights and improvements underlined. These tools are now widely used beyond the LHC in the entire CERN accelerator complex, as well as in Super-KEKB and for Future Circular Collider studies, and could be of great interest to correct and improve the optics in other machines.

Footnotes

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