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Elettra 2.0 - the girder support design

Monday, 8 May 2023 16:30 (2 hours)

Elettra will be upgraded between 2025 and 2026 and the storage ring lattice will be totally different to enhance the emittance and improve the coherence of the machine.
The storage ring design requires a stiff support system to reduce the impact of vibrations on the electron orbits, a high thermal stability as well as low static deformations. The magnets support system must be easy to transport, align and must be cost effective. In order to achieve these requirements, the magnets supports of each synchrotron cell are granite blocks long from 0.8 to 1.57 m and the girder alignment system consists of 3 main adjustment feet and 2 stiffeners. An optimization study was conducted de-fining the most effective location of the feet. Each magnet can be aligned on the girder by means of 3 levelling wedges that can be moved both manually and automatically by means of motorized actuators.
A FEA calculation was carried out to optimize the design in order to achieve a target stiffness and an experimental test was performed on a prototype girder in order to verify the numerical results.

Funding Agency

Footnotes

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Yes

Primary author: CUDIN, Ivan (Elettra-Sincrotrone Trieste S.C.p.A.)

Co-authors: RAINONE, Diego (Elettra-Sincrotrone Trieste S.C.p.A.); SIMONETTI, Giovanni (Elettra-Sincrotrone Trieste S.C.p.A.)

Presenter: SIMONETTI, Giovanni (Elettra-Sincrotrone Trieste S.C.p.A.)

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