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# Bending magnet photon absorber design and calculations for Elettra 2.0 storage ring

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To harness the major advances that have been done in the field of synchrotron light research, Elettra synchrotron radiation facility is being updated. Presently in its design phase, the Elettra 2.0 project will allow new and better research to be performed at the facility. In the upgrade of the storage ring, the new 6BA lattice brings challenges in terms of available space and radiated power. This paper presents the bending magnet photon absorber designed to cope with the new requirements. The absorber concept created for ESRF-EBS has been revised and re-engineered to make it suitable for the specific features of Elettra's sources. To reduce the high-power densities induced by the short source-absorber distance, the one-jawed, toothed profile was obtained via a robust optimization, considering possible misalignments or beam miss-steering. Novelty of the approach is the absorber insertion in the vacuum chamber from the inside of the ring. Finally, presented are the thermo-mechanical and computational fluid dynamics simulations (ANSYS) performed to validate the design, comprehensive of a *monte-carlo*, *ray-traced* simulation to evaluate photon reflections (SYNRAD) and their effects.

## Funding Agency

## Footnotes

## I have read and accept the Privacy Policy Statement

Yes

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