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## **Double achromat solution with a dedicated collimation system for the MEBT-3 section of MYRRHA**

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

MINERVA (MYRRHA phase 1) aims at demonstrating the requirements related to the reliability and the fault tolerances of the MYRRHA accelerator-driven system (ADS) by the realization of a superconducting linac for 100 MeV/4 mA proton beams. The design and the performance of the Medium Energy Beam Transfer section (referred to as MEBT-3) of the accelerator are critical for reaching the goals of MINERVA.

The purpose of the MEBT-3 is to fast-switch between a 17 MeV beam coming from one injector to another to ensure a continuous injection of 17 MeV proton beam in the main superconducting linac, in case one of the injectors would fail. The design goals of the MEBT-3 are to reach maximal beam transmission, accurate beam definition for matching the linac and a double achromaticity after the last switching dipole. For the protection of the main linac, a dedicated collimation system consisting of multiple slits was designed and incorporated into the MEBT-3 section.

The expected performance of the MEBT-3 has been studied extensively by beam dynamics simulations in order to reach the desired specifications. The non-accelerating MEBT-3 section includes multiple transverse and longitudinal beam focusing elements, such as magnetic quadrupoles and room temperature re-bunchers. The latest beam dynamics studies for achieving the MEBT-3 design goals will be presented.

### **Funding Agency**

### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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