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Survey and alignment of the MESA accelerator

Thursday 5 June 2025 15:30 (2 hours)

The Mainz Energy recovery Superconduction Accelerator (MESA) will be a recirculating electron linear accelerator, capable of delivering beam energies up to 155 MeV and 150 µA in external beam mode or 105 MeV and 10 mA in energy recovery mode. The building consists of a tunnel for the electron guns, spin preparation, and normal conducting pre-accelerator up to 5 MeV and 10 mA. The main accelerator is setup in the neighboring four underground experimental halls.
The process of a survey of the building structures, establishing a network of reference points and a common coordinate system is presented. Furthermore the different methods, for example a classic approach with theodolites aligned on the accelerator axis for alignment in the tunnel, but also the use of a total station and a modern laser tracker for building survey and alignment of the main accelerator components will be discussed. Finally, an overview of achieved uncertainties and systematic errors will be given.

Footnotes

Paper preparation format

LaTeX

Region represented

Europe

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