

Beam dynamics simulations for the ERDC project: industrial SRF linac

Thursday 29 August 2024 16:00 (2 hours)

Compact conductively cooled SRF industrial linacs can provide unique parameters of the electron beam for industrial applications. (up to 10MeV, 1MW). For ERDC project we designed normal conducting RF injector with thermal RF gridded gun integrated in first cell of multi-cell cavities. For design of the RF gun we used MICHELL software to simulate and optimize parameters of the beam. Output file was converted to ASTRA format and most beam dynamic simulations in multi-cell normal conduction cavity and cryomodule were performed by using ASTRA software. For cross-checking we compare results of MICHELL and ASTRA in first few cells. At the end of injector beam reach ~250keV energy which allow to trap bunch in acceleration regime without losses in TESLA like cavity. Short solenoid at the end of injector will allow to regulate transverse beam size in cryomodule to match beam to extraction system.

Footnotes

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