MATTER AND TECHNOLOGIES

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# Geometry dependent beam dynamics of a 3.5-cell superconducting radio frequency gun

A new superconducting radio-frequency (SRF) electron gun is developed at HZDR ELBE source. To optimize the geometry of the 3.5-cell SRF cavity, the distributions of the electromagnetic fields and the output electron beams qualities with different geometric models are investigated in this paper. The simulation results show the higher electric field in the first half cell, the better beam parameters we can obtain, which, however, will also lead to a higher Emax/Eacc and Bmax/Eacc.

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