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Physics design of linear accelerator for S3FEL

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Shenzhen Superconducting Soft X-Ray Free Electron Laser (S3FEL), a continuous-wave superconducting facility aimed at providing soft X-ray FEL pulses with a repetition rate of 1 MHz, is currently under construction. These FEL pulses originate from the electron beam generated in a superconducting linear accelerator (linac). This paper comprehensively describes the physics design of the linac, detailing the determination of the longitudinal working point, the optimization of the transverse lattice, and also the particle tracking simulation. Additionally, this paper presents a detailed summary of the linac beam performance.

Footnotes

Paper preparation format

Region represented

Asia

Funding Agency

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