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Design Progress on 50MW Pulsed Power C-band Klystron Gun and Magnet

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This paper describes the design progress of the electron gun, and solenoid of 50 MW class klystron at C-band frequency (5720 MHz) for CEPC LINAC. The beam optics is designed in DGUN code for a space charge beam current of 318 A at an acceleration potential of 350 kV with average cathode loading of less than 6.0 A/cm². The maximum surface electric field at the beam optics and high voltage ceramic seal is reduced to be less than 18.65 kV/mm and 3.81 kV/mm, respectively. The magnet design transports the beam with low scalloping parameter less than 5.0 % with laminar flow downstream. Gun envelop and magnetic field are designed in POISSON code. 3-D CST simulation is under progress for validation of 2D simulation results.

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Footnotes

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