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## High average current DC electron gun for strong hadron cooling

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The Strong Hadron Cooling (SHC) for electron ion collider project requires a state of the art high brightness DC electron gun. The gun is required to deliver high average current (100 mA), 1 mm-mrad normalized transverse emittance and 1-2.5 nC bunch charge. In this paper, we describe the high voltage design of a DC gun with an operating voltage of 550 KV, conditioned up to 600 KV. The gun design includes design of the electrode, active cooling for the cathode electrostatic design of the triple point shield, a novel high voltage power supply (HVPS) and HVPS power transfer mechanism. We also discuss the beam dynamics simulation to quantify the ultimate performance of the gun.

### Footnotes

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