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## Recent Work

**Title**

The DAHRT-II electron injector

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## The DARHT-II Electron injector\*

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The injector for the second axis of the Dual-Axis Radiographic Hydrotest Facility (DARHT) is being constructed at LBNL. The injector consists of a single gap diode extracting a 2 microseconds, 2kA, 3.2 MeV electron beam from a 6.5-inch diameter thermionic dispenser cathode. The injector is powered through an insulating column by a Marx generator. There is also the possibility of extracting a beam current of 4 kA. The focusing system for the electron beam consists of a Pierce electrostatic focusing electrode at the cathode and three solenoidal focusing magnets positioned between the anode and induction accelerator input. The off-energy components (beam-head) during the 400 ns energy rise time are overfocused, leading to beam envelope mismatch and growth, resulting in the possibility of beam hitting the accelerator tube walls. The anode focusing magnets can be tuned to avoid the beam spill in the 2kA case. To allow beam-head control for the 4kA case we are considering the introduction of time-varying magnetic focusing field along the accelerator axis generated by a single-loop solenoid magnet positioned in the anode beam tube. We will present the final design as well as beam dynamics calculations of the injector.

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