



Contribution ID: 72

Type: **Contributed Poster**

Initial Results from a Laser-Heated Thermionic Cathode

Tuesday, 8 November 2022 17:00 (2h 30m)

There is increasing interest in developing accelerator technologies for space missions, particularly for fundamental science. In order to meet these mission needs, key accelerator technologies must be redesigned to be able to function in a remote and harsh environment. In this work we focus on a modest electron injector system, specifically the traditional thermionic cathode. Typically such cathodes are heated by a power supply that is floated at the cathode negative high voltage. We are pursuing laser heating a thermionic cathode in order to remove the heater power supply from the injector system, allowing for reduced engineering complexity and power requirements for the injector. To date we have shown that a simple tungsten disk cathode can be heated by a laser only, and can require much less laser power than heater power for the same emission current. Future work includes back-illuminating the cathode and illuminating with a CW laser diode.

Acknowledgments

This research is supported by the Laboratory Directed Research and Development program of Los Alamos National Laboratory under project number 20210443ER.

Primary authors: ANDREWS, Heather (Los Alamos National Laboratory); ALEXANDER, Anna (Los Alamos National Laboratory); BECKMAN, Darrel (Los Alamos National Laboratory); HOLLOWAY, Michael (Los Alamos National Laboratory); GUIDER, Angus (Los Alamos National Laboratory); MOODY, Jackson (Los Alamos National Laboratory); MORENO, Juan (Los Alamos National Laboratory); SANTANA, Gabriel (Los Alamos National Laboratory)

Presenter: ANDREWS, Heather (Los Alamos National Laboratory)

Session Classification: Poster Session and Reception

Track Classification: Poster Session: WG5 Poster: Beam Sources, Monitoring, and Control