



Contribution ID: 825 Contribution code: WEPC55

Type: **Poster Presentation**

## A laser-heated thermionic cathode

*Wednesday, 22 May 2024 16:00 (2 hours)*

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 more reliably and efficiently 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 resistively heated by a power supply that is floated at the cathode accelerating negative high voltage. This can increase engineering complexity and add a significant load to the accelerating voltage supply. We pursue 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 tantalum disk cathode can be heated by a laser with similar emission performance to the same disk resistively heated.

### Footnotes

### Funding Agency

### Paper preparation format

LaTeX

### Region represented

North America

**Primary author:** ANDREWS, Heather (Los Alamos National Laboratory)

**Co-authors:** ALEXANDER, Anna (Los Alamos National Laboratory); BECKMAN, Darrel (Los Alamos National Laboratory); GUIDER, Angus (Los Alamos National Laboratory); HOLLOWAY, Michael (University of Maryland); LEWELLEN, John (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:** Wednesday Poster Session

