



Contribution ID: 1848 Contribution code: WEPL075

Type: **Poster Presentation**

## **Modeling for the phased injector upgrade for 12 GeV CEBAF**

*Wednesday, 10 May 2023 16:30 (2 hours)*

As a follow on to the 12 GeV upgrade to the Continuous Electron Beam Accelerator Facility, the front end of the DC photo-gun-based injector has gone through a phased upgrade. The first phase focused on the beamline between the gun and the RF chopper system, and the second phase addresses the beamline after the RF chopper system including replacing the capture section and quarter cryomodule with a new booster module containing a 2-cell and 7-cell cavity string. Throughout the design process, we maintained and developed three models, one for the existing injector and one for each of the upgrade phases. With these models, we evaluated proposed hardware upgrades, evaluated and determined optimized beamline element positions, developed buncher voltage requirements, and settings for optimal injector running. In this paper, we will describe the models and results from these various studies and provide a brief summary of Phase 1 commissioning.

### **Funding Agency**

This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics under contract DE-AC05-06OR23177.

### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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**Session Classification:** Wednesday Poster Session

**Track Classification:** MC5: Beam Dynamics and EM Fields: MC5.D01: Beam Optics Lattices, Correction Schemes, Transport