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# Optics Reconstruction in the SCL section of the FNAL Linac

*Tuesday 12 August 2025 16:00 (2 hours)*

The Side-Coupled Linac (SCL) section of the FNAL linac accelerates the beam from 116 MeV to 401.5 MeV, operating at 22-24 mA beam current. Transverse focusing is performed by 32 quadrupoles, and the beam orbit is guided by 19 dipole correctors and measured by 29 BPMs. The bunch length is measured in a single location by a Bunch Shape Monitor (BSM). This paper presents a three-step reconstruction of the machine optics. First, the transverse and longitudinal Twiss parameters at the start of the SCL section are determined using quadrupole scans and BSM measurements at different settings of an upstream cavity. Second, the quadrupole calibrations are adjusted based on differential-trajectory measurements. Finally, the beam is propagated along the SCL linac using the code TraceWin. A comparison between TraceWin simulations and the beam envelope measured by the 12 wire scanners of the SCL linac was performed. Transverse and longitudinal beam parameters at the entrance and exit of the SCL section will be reported.

## Please consider my poster for contributed oral presentation

No

## Would you like to submit this poster in student poster session on Sunday (August 10th)

No

## Footnotes

## Funding Agency

## I have read and accept the Privacy Policy Statement

Yes

**Author:** CARNEIRO, Jean-Paul (Fermi National Accelerator Laboratory)

**Co-authors:** SHEMYAKIN, Alexander (Fermi National Accelerator Laboratory); CHEN, Erin (Fermi National Accelerator Laboratory); PATHAK, Abhishek (Fermi National Accelerator Laboratory); SHARANKOVA, Ralitsa (Fermi National Accelerator Laboratory)

**Presenter:** PATHAK, Abhishek (Fermi National Accelerator Laboratory)

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