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Progress Toward Dual-Pulse Operation at the Proton Storage Ring of LANSCE

Tuesday 12 August 2025 16:00 (2 hours)

Significant progress has been made in both hardware development and simulation capability to shorten the proton bunch width delivered to the Lujan Center at LANSCE via the Proton Storage Ring (PSR). We have successfully demonstrated operation of the PSR RF buncher at 5.6 MHz, doubled from the standard running condition, to accumulate the shorter beam pulse. A quick switch between two modes is under consideration. To extract the beam properly, a prototype kicker test stand has been established, and the measurement of the pulse width, rise time, and charging time will be demonstrated. On the simulation front, beam dynamics models have been refined using both ELEGANT and pyORBIT codes to optimize dual-pulse stacking scenarios. We have performed detailed studies of longitudinal phase space evolution, space charge mitigation, and bunch separation fidelity, which guide ongoing design efforts and beamline integration. These advancements will be the foundation for future development of shorter pulses for the Lujan Center.

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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

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