

ACCELERATOR SEMINAR
(JOINT EVENT WITH PLASMA PHYSICS SEMINAR)

High-Gradient Booster Linac for Multi-GeV Proton Radiography at LANSCE

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Description

Increasing energy of proton beam at the Los Alamos Neutron Science Center (LANSCE) from 800 MeV to 3-5 GeV will improve radiography resolution ten-fold. This energy boost can be achieved with a compact cost-effective linac based on normal conducting high-gradient (HG) RF accelerating structures operating at liquid nitrogen temperatures (cryo-cooled). Such an HG booster is feasible for proton radiography (pRad), which requires short beam pulses at very low duty. The pRad booster starts with a short L-band section to capture and compress the 800-MeV proton beam from the existing linac. The main HG linac will be based on S- and C-band cavities. An L-band de-buncher at the booster end can reduce the beam energy spread if needed for pRad experiments. We are developing proton cryo-cooled HG structures with distributed RF coupling for the booster. Prototype cavity structures at S- and C-band are designed and will be tested cryo-cooled to measure breakdown rates at high gradients. The booster linac beam dynamics design and preliminary proton radiography simulations will also be discussed.

Tuesday, June 16th , 2026 at 4:00 PM

seminar room theory (SB3.3.170a)
The seminar takes place exclusively in presence

Coordinator: Claude Krantz
Secretary: Paola Lindenberg

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