

# Design of a multi-purpose LEBT for the LANSCE Front End Upgrade

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The Los Alamos Neutron Science center (LANSCE) facility at LANL is considering an upgrade of its front end, from the source to the end of a 100 MeV DTL. One of the main features of LANSCE is that it delivers several types of bunching systems to 5 users (Lujan Neutron Scattering Center, Proton Radiography Facility, Ultra Cold Neutron Center, Isotope Production Facility and the Weapons Neutron Research Facility WNR). The first four users accept bunch trains modulated at 201.25 MHz produced from essentially DC beams. The WNR facility requires the delivery of sub-nanosecond bunches every 1.8 microseconds. At present the bunching system for the WNR beam is prepared in a 750 keV LEBT. The proposed upgrade will need to manipulate short bunches for WNR at an energy of 100 keV to be injected into a 3 MeV RFQ. The long (DC) beams can be charge-compensated by the ionization of background gas, which cannot be done for the short bunches of WNR. At such low energy, the uncompensated space charge of the bunch will require a special LEBT design that will work simultaneously for all types of beams to be delivered by the LANSCE upgrade. We will describe a new LEBT layout for the LANSCE Front End Upgrade that will be able to deliver the required beam bunches to all facilities.

## Footnotes

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**Primary author:** HENESTROZA, Enrique (Los Alamos National Laboratory)

**Co-authors:** Dr SOSA GUITRON, Salvador (Los Alamos National Laboratory); KURENNOY, Sergey (Los Alamos National Laboratory); DIMITROV, Dimitre (Los Alamos National Laboratory); UPADHYAY, Janardan (Los Alamos National Laboratory)

**Presenters:** UPADHYAY, Janardan (Los Alamos National Laboratory); HENESTROZA, Enrique (Los Alamos National Laboratory)

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