

Towards a Neutron Target and RIB Storage Ring Facility at LANSCE

2022 NSAC Town Hall - Andrew L. Cooper, LANL

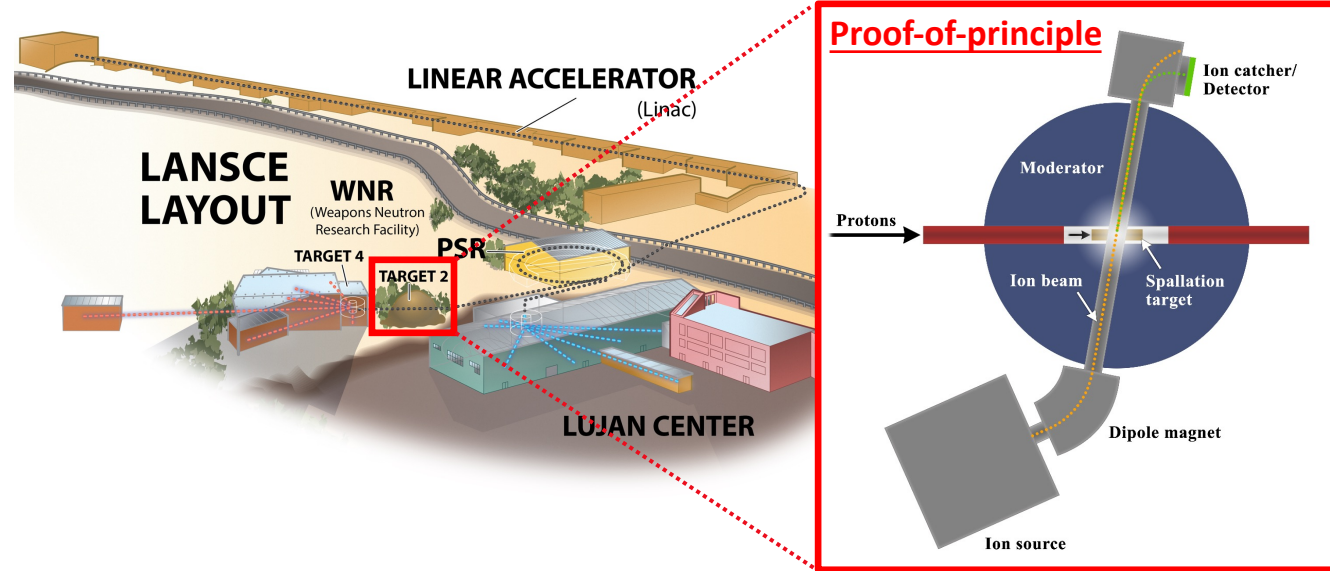
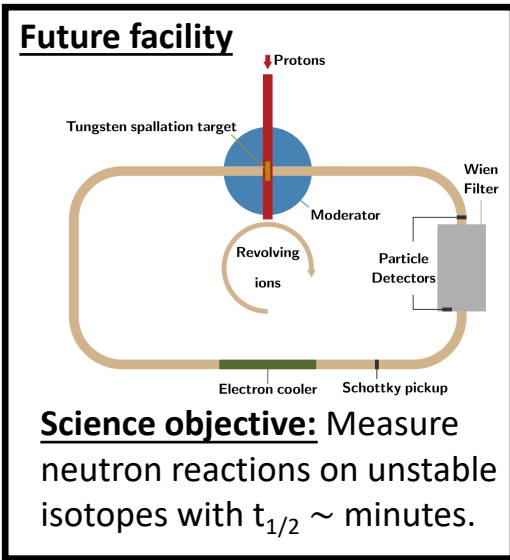


Fig. credits: R. Reifarth

A single-pass neutron target proof-of-principle experiment at Target 2:

1. Construct a simple, cost-effective target and moderator, and characterize ion pipe neutron field density with Au samples during operation with LANSCE proton beam.
2. Transport heavy ions through the neutron target assembly to induce neutron captures in inverse kinematics using strong, well-known resonances and collect ions for offline analysis.
3. Measure the number of transmuted beam ions collected via decay gamma-ray counting setup to obtain the effective neutron density within the moderator.

Testing and measurement objectives:

- **Tech. mat.** → Demonstrate the neutron target concept and reveal future facility requirements.
- **Measure n density in moderator** → Validate design intuition and simulation capability.