

Nuclear Data Activities at LANSCE

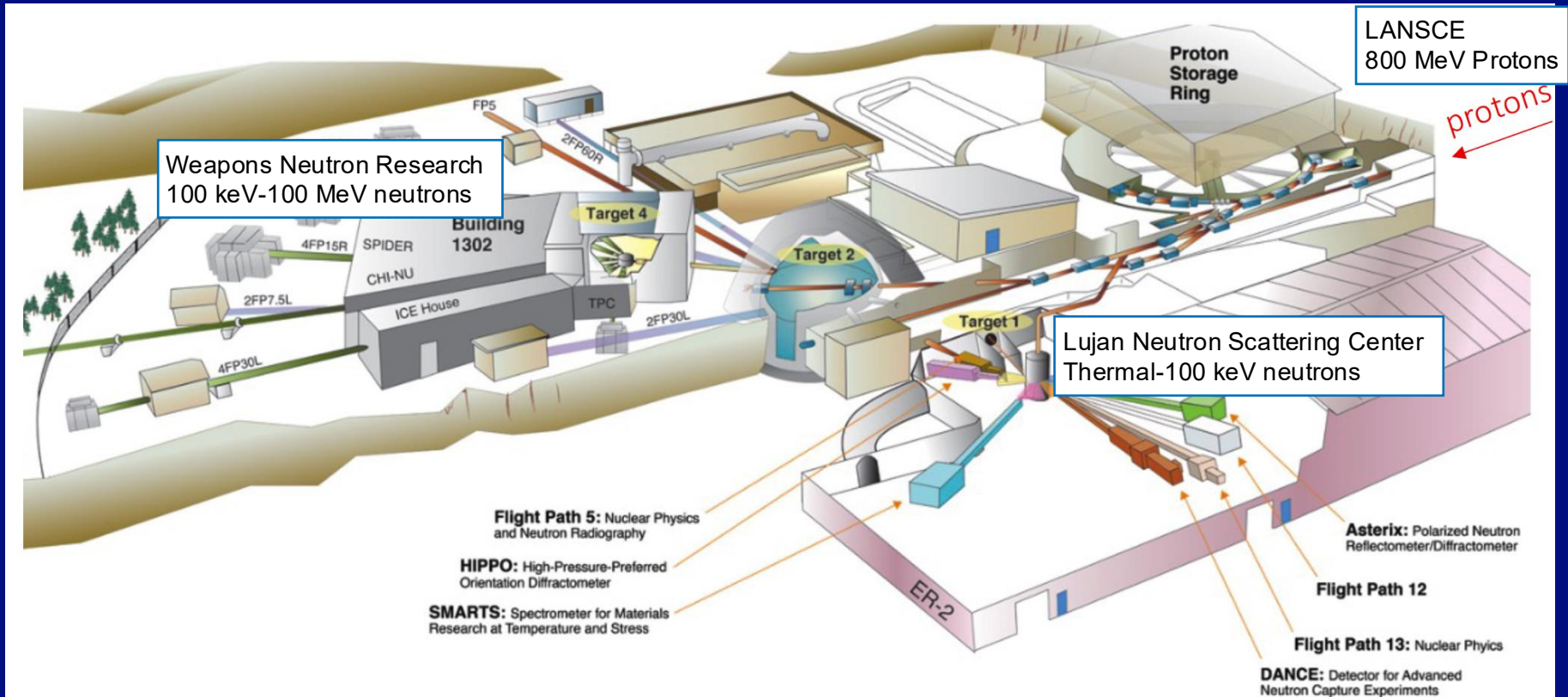
Jack Winkelbauer
February 12, 2026

Los Alamos Neutron Science Center (LANSCE)

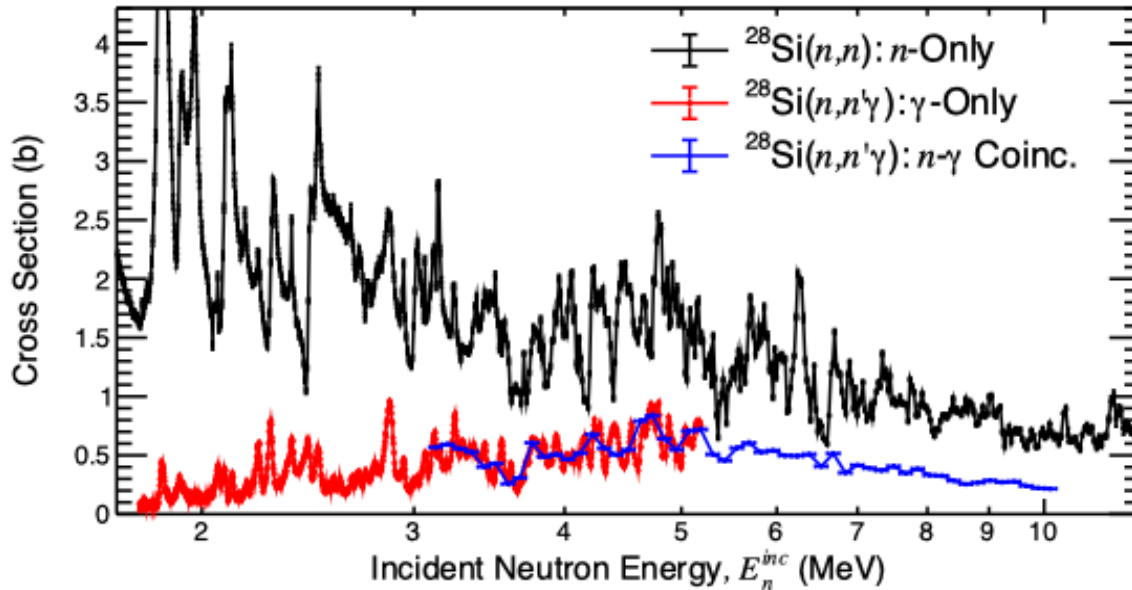
LAMP: LANSCE Modernization LANE: LANSCE Enhancement



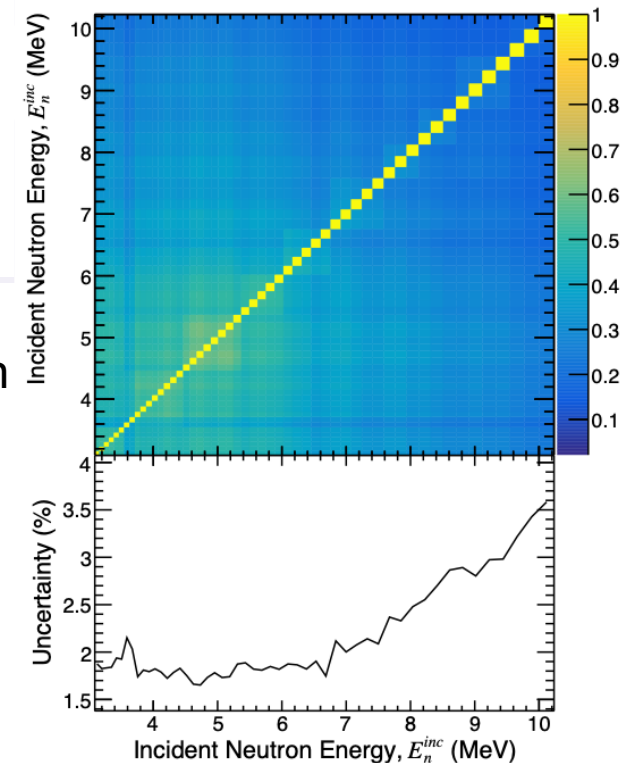
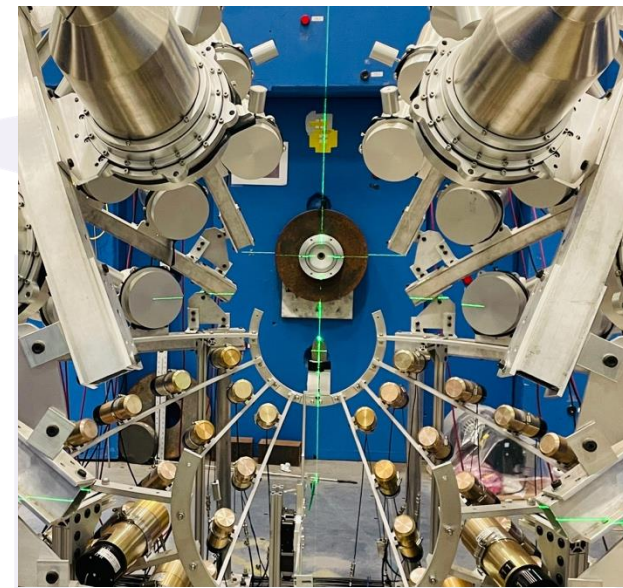
South Side Experimental Facilities



The CoGNAC Array Produces Elastic & Inelastic Scattering Double-Differential Results with Unprecedented Precision

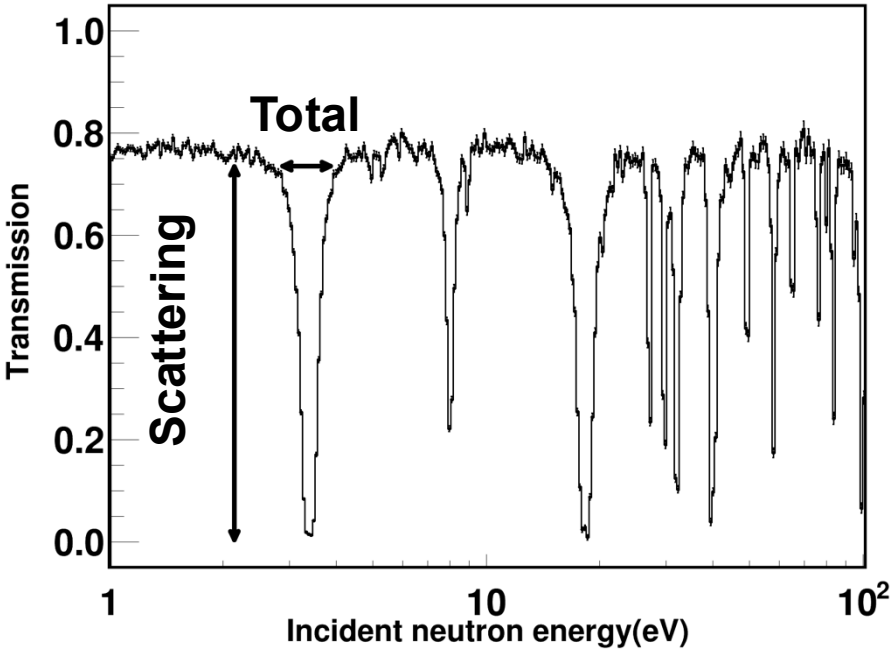


- Simultaneous (n,n) and (n,n') with correlated, continuous cross sections and angular distributions with complete cross-reaction covariances.
- The LANSCE white neutron source provides essential detail and energy granularity necessary and complementary to monoenergetic sources

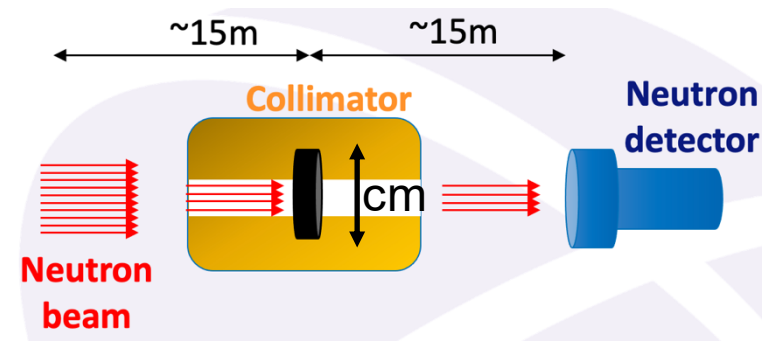


DICER: studying neutron capture on radionuclides: Study everything else simultaneously!

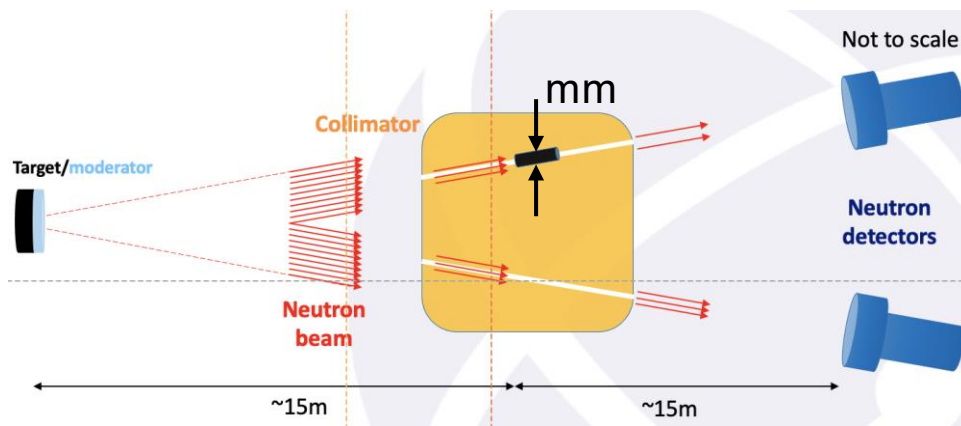
Total \approx Scattering + Capture



Traditional monococular mode



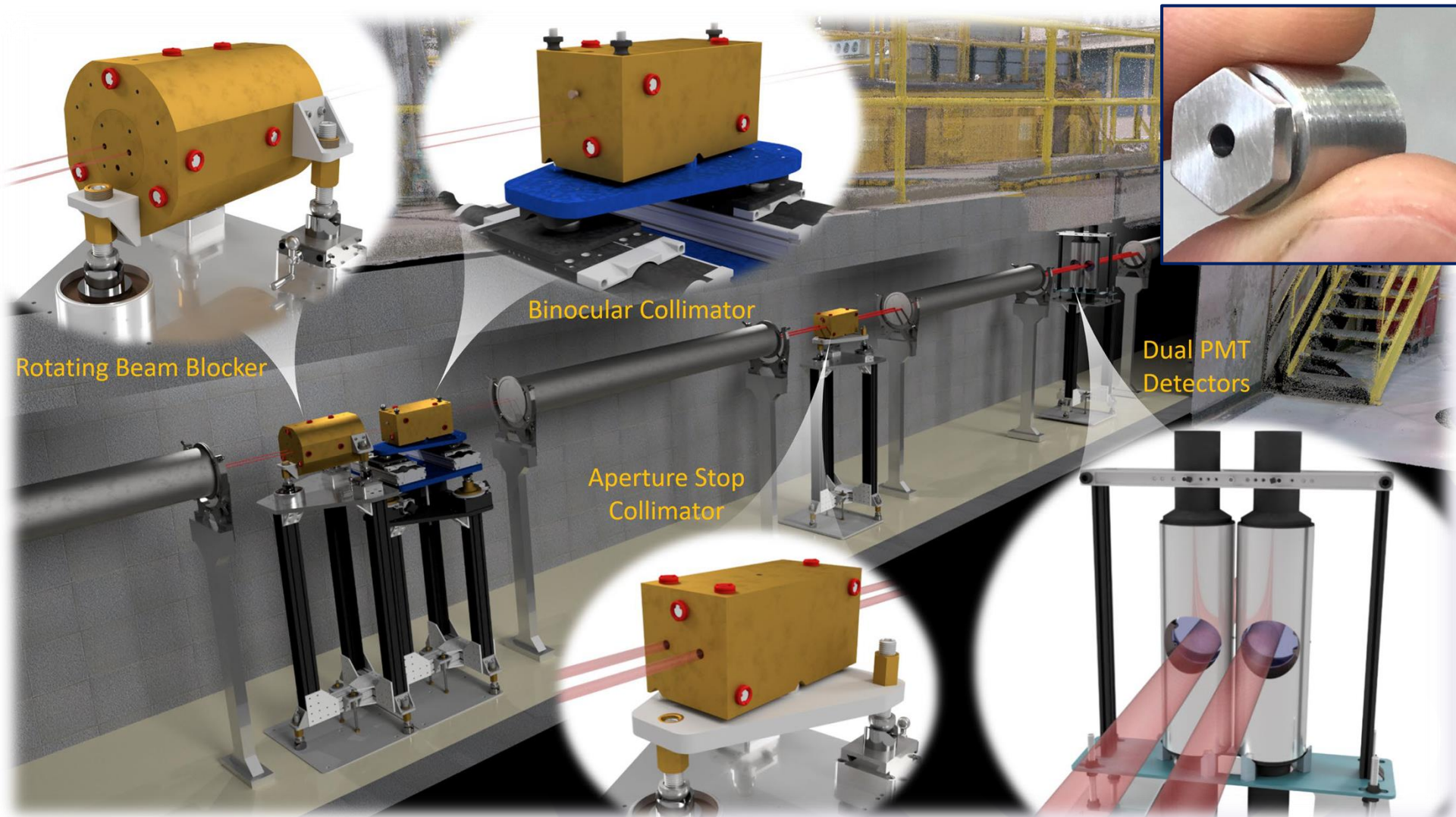
Unique binocular mode



$$T = e^{-n\sigma_{tot}}$$

Neutron transmission (T) is related to the total cross section (σ_{tot}) and areal density (n) of the sample.

DICER: Device for Indirect Capture Experiments on Radionuclides

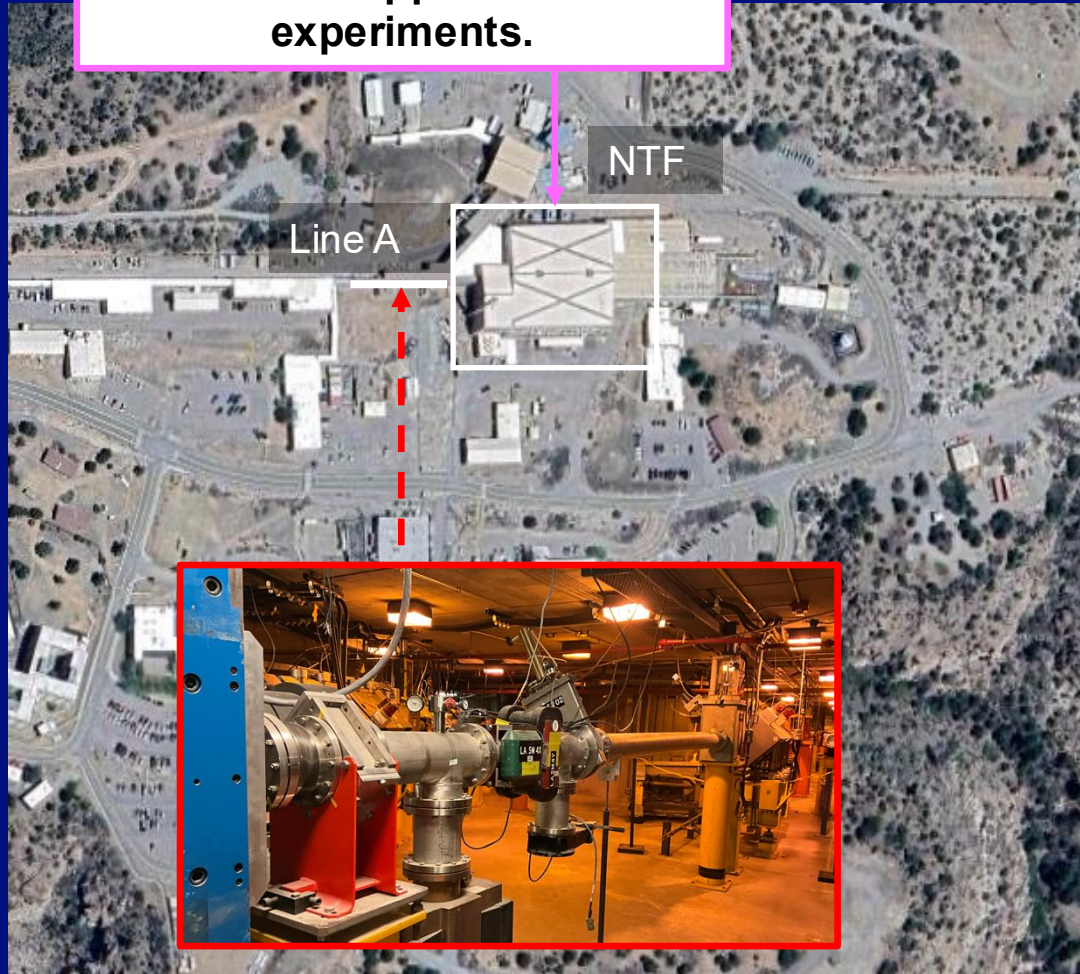


A. Stamatopoulos et al., NIMA (1025) 166166, 2022
A. Stamatopoulos et al., IEEE Trans. Nucl. Science
70, (2023)
A. Stamatopoulos et al., Neutron News 33, 12 – 14
(2022)

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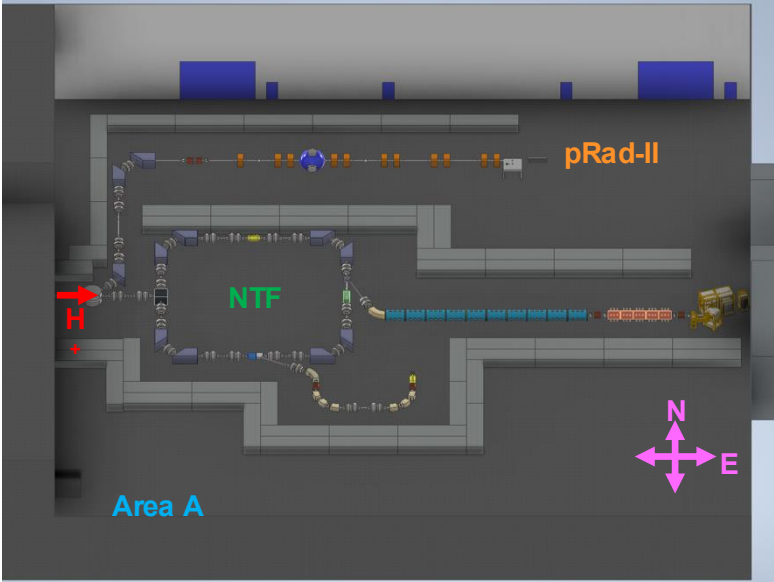
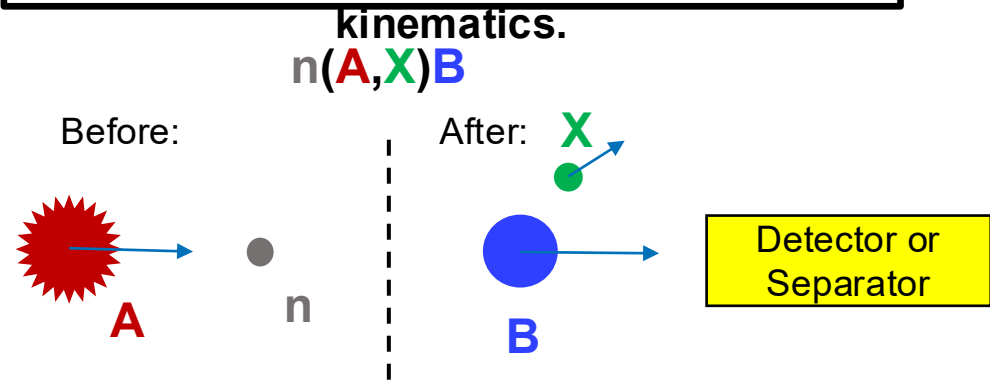
Line A Project – Return of protons to Area A

Area A can support MW-class experiments.

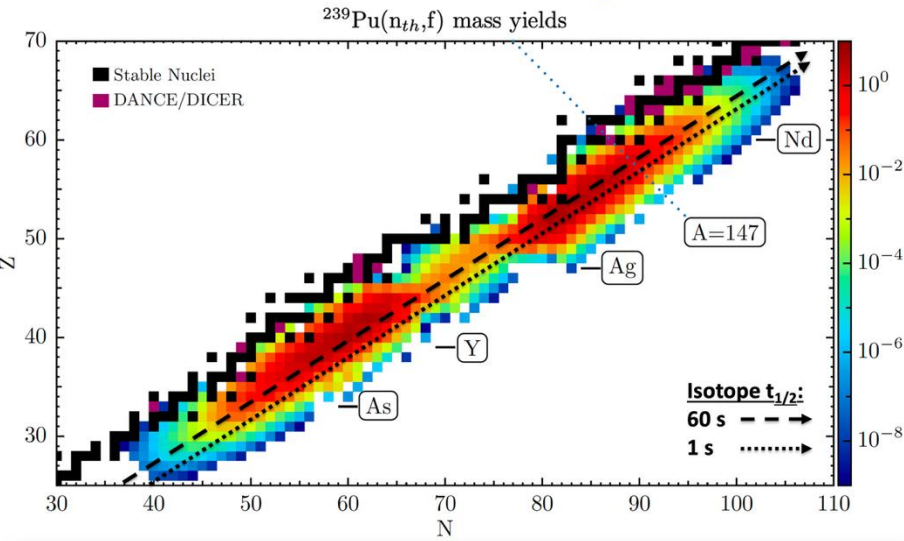


The NTF will revolutionize nuclear physics with neutrons by enabling cross section studies on short-lived nuclei

NTF Science Mission: Measure nuclear reactions with neutrons in inverse kinematics.



Conceptual Drawing



Unlock the ability to measure neutron cross sections on isotopes with $t_{1/2} \sim$ minutes!

NNSA Impact:

- Stockpile assessment and certification
- Weapons physics
- Nonproliferation
- Forensics

DOE-SC Impact:

- Heavy element nucleosynthesis
- Nuclear astrophysics
- Radioactive ion beams

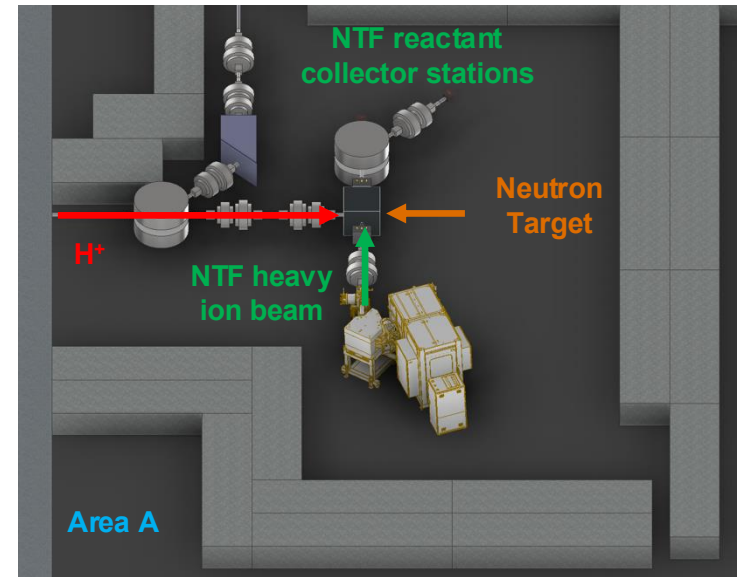
The NTF will be developed in a phased approach under the LANSCE Enhancements (LANE) project

NTF-First Light: FY2028-2032

- Energy Coverage: < 10 keV/u
- Beam Half-Life: $t_{1/2} >$ years

NNSA Program Drivers:

- **Better data:** Nonproliferation, forensics, and astrophysics
- **Facility modernization:** First NTF operations
- **Technical maturation:**
 - Radioactive ion beams
 - Particle separators and detectors



NTF-Storage Ring and High Power: FY2031-2037

- Energy Coverage: 2-20 MeV/u
- Beam Half-Life: minutes $< t_{1/2} <$ years

NNSA Program Drivers:

- **Better data:** Stockpile assessment and certification
- **Facility modernization:** Unstable beam acceleration and storage systems for the NNSA
- **Technical maturation:** Advanced detection systems and high-intensity targets

