Measuring a Prompt Fission Neutron Spectrum (PFNS) at Chi-Nu

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On behalf of the Chi-Nu Collaboration (LANL+LLNL)

2016-13-09

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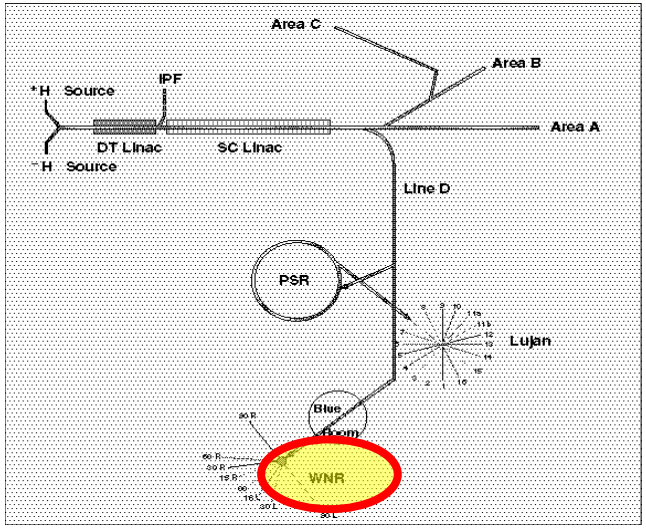
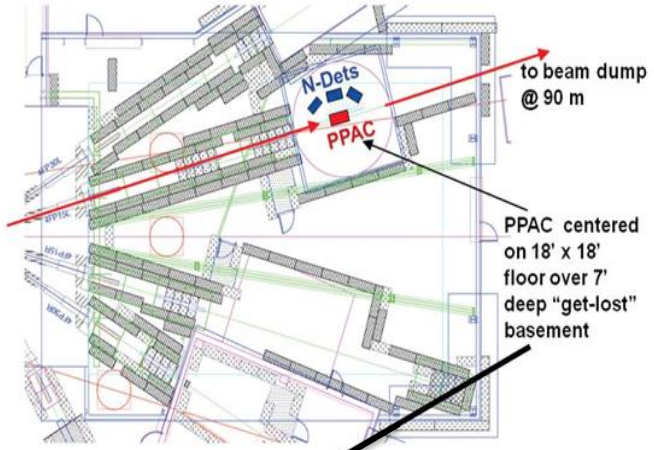
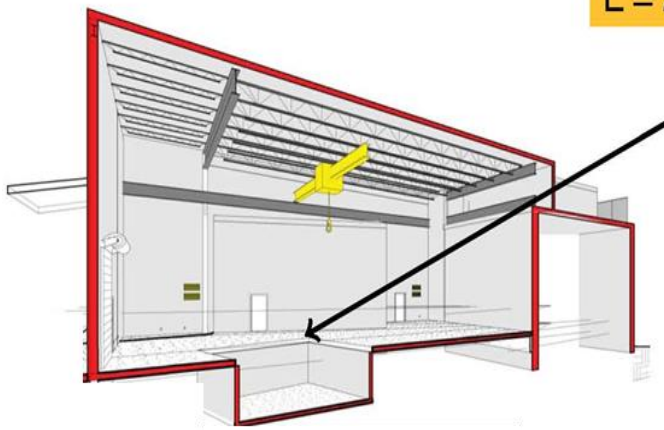
UNCLASSIFIED

LANSCE + WNR





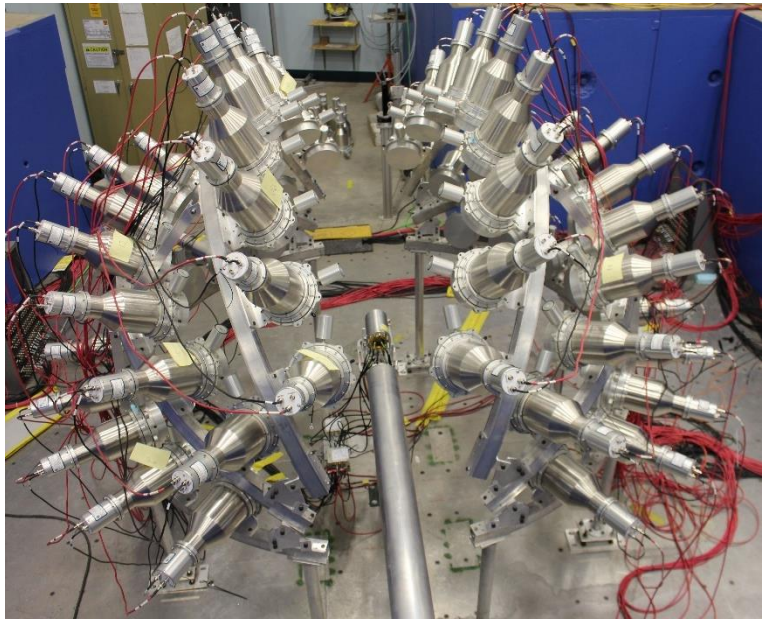
L = 21.5 m



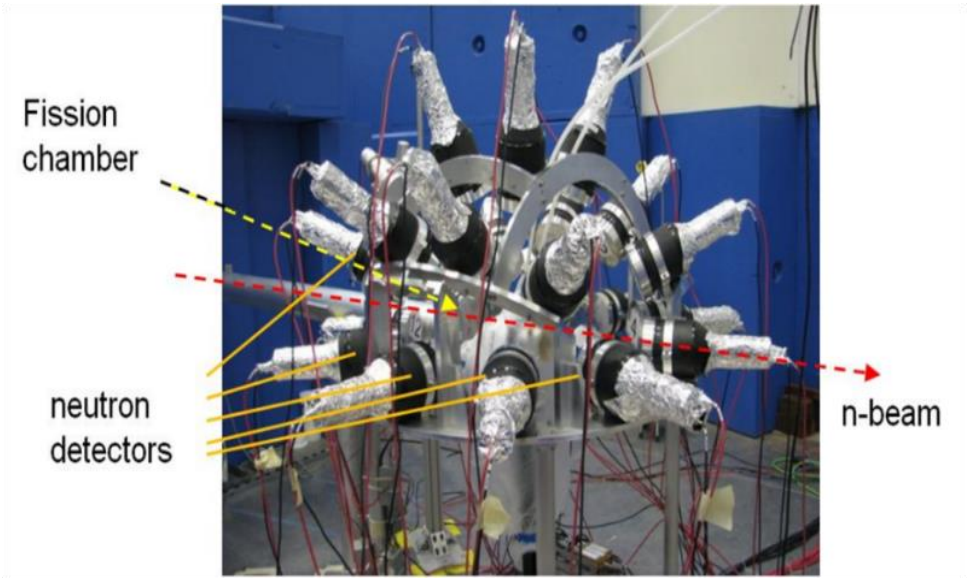
- 800 MeV pulsed *p* beam.
- Macro pulses ~625 μs wide,
- carries 347 micro pulses, 1.8 μs wide.
- Most intense white neutron source.

Chi-Nu

54 Liquid scintillators En > 0.5 MeV

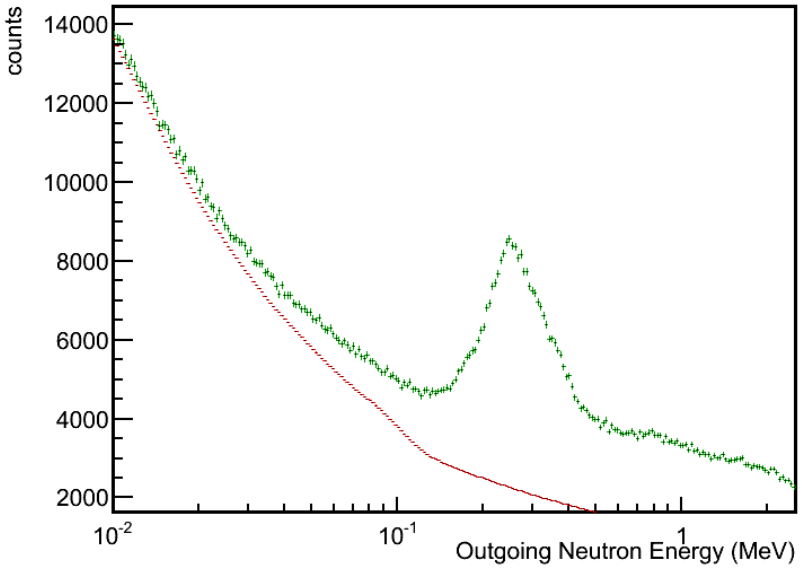


22 ^{6}Li-glass scintillators
En < 1 MeV

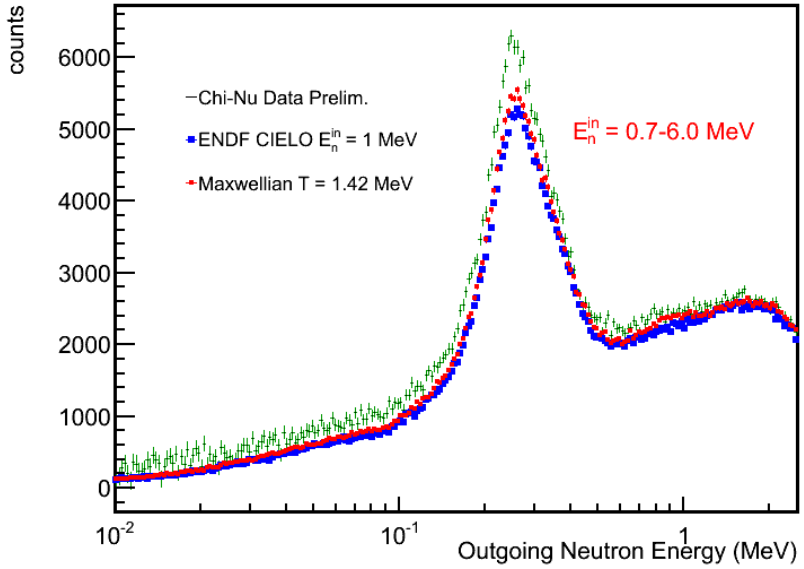


- **Full data sets were taken with both arrays for ^{235}U during 2015-2016 Run Cycle:**
  -1.5 months with the liquid scintillator array, 3 months with the Li glass array
- **Data taken with ^{252}Cf to benchmark the MCNP model**
- **Data set being gathered this (2016-2017) run cycle for ^{239}Pu**

Preliminary Results



- Raw spectra plotted (green)
- Random coincidence background (red)



- Background subtracted data (green)
- Results of simulating the LiGI array in MCNP (red, blue)

To learn more about the background measurement, MCNP simulations or to see our preliminary result for the LiGI PFNS, see either my poster or the talk by my colleague M. Devlin Wed. @ 1430 in “Fission Physics”