

USNDP LANL Report



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Personnel Changes and National/International Activities

■ Staff Members and Post-Docs

- Fredric Tovesson promoted to deputy group leader
- LANSCE-NS now P-27
- T-2 postdoc, Michael Bertolli, moved to ORNL
- Matthew Mumpower, a short-term visiting scientist in T-2
- Rhiannon Meharchand, director funded postdoc, left
- Brent Manning, a new postdoc, hired by P-27

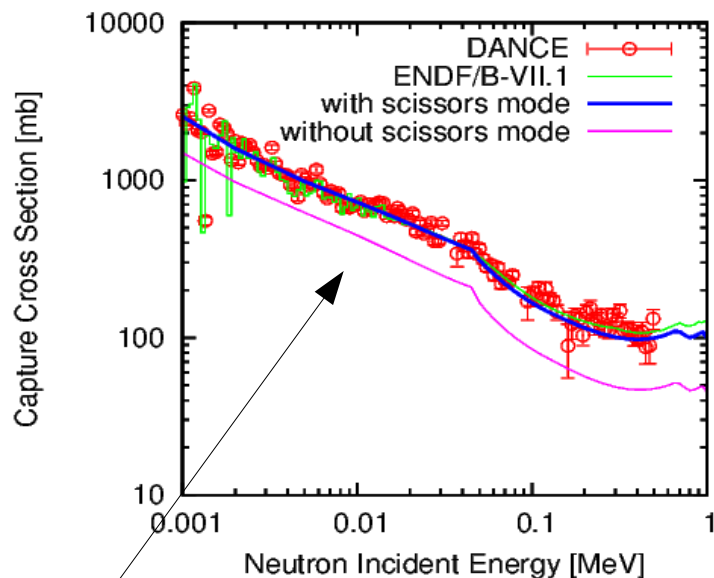
■ Conference Organized and Plans

- **CW2014**, Int. Workshop on Nuclear Data Covariances, Santa Fe, Apr. 2014
- **FIESTA 2014**, Fission School and Workshop, Santa Fe, Sept. 2014
 - T-2 and LANSCE-NS
- co-organizing Int. Conf. Nuclear Reaction Mechanisms, **Varennna**, Italy, June 2015
 - CERN and LANL
- co-organizing Int. Workshop on Compound Nuclear Reaction, **CNR15**, Tokyo, Japan, Oct. 2015
 - Tokyo Institute of Technology and LANL T-2

■ WPEC/OECD/NEA

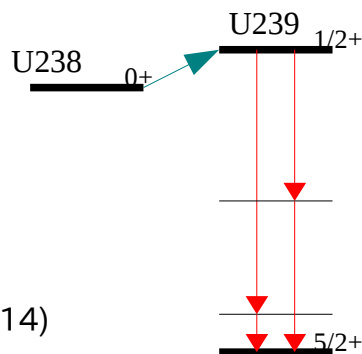
- lead one subgroup
 - SG40 Cielo pilot program

Progress in Nuclear Reaction Modeling for Actinides



standard parametrization of photon strength functions under-estimate capture cross sections for actinides

Ullmann et al. PRC 89 034603 (2014)

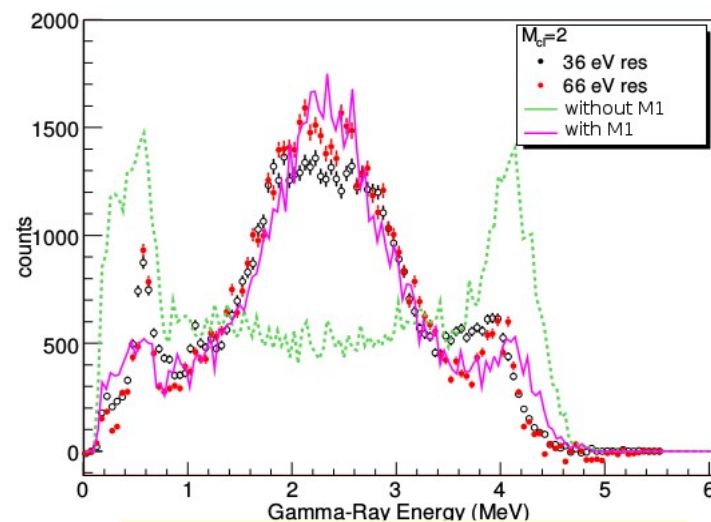


Measurements

- DANCE detector at LANSCE
- not only cross sections but also gamma-ray multiplicity information obtained

Theory and Model Code

- Monte Carlo Hauser-Feshbach method enables us to probe nuclear reaction mechanism

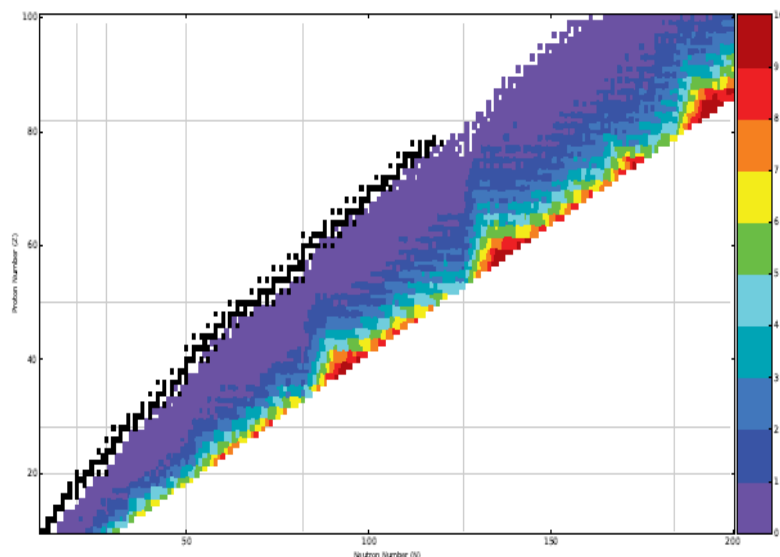


gamma-ray energy spectra for multiplicity of 2

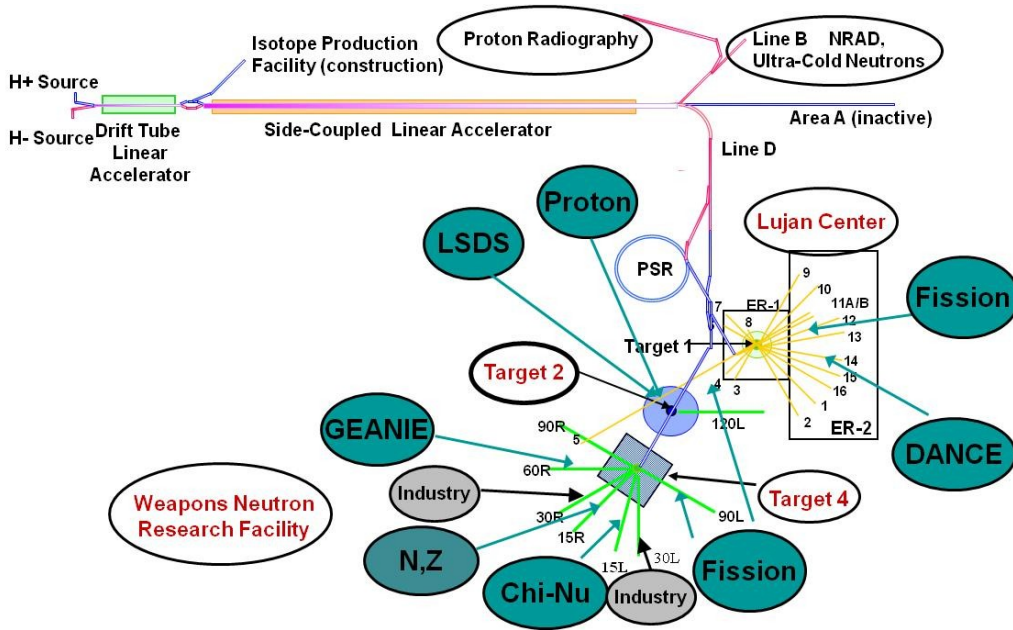
Progress in Nuclear Reaction Theory for Nuclear Data

- **Consistent treatment of direct reaction in Hauser-Feshbach**
 - invited talk given by Kawano at ESNT (Mar. Paris) and PNDND (Oct. Paris)
 - a paper under preparation
- **Monte Carlo Hauser-Feshbach for fission neutrons and gamma-rays**
 - Phys. Rev. C paper by Stetcu et al.
 - several invited talks given by Talou
- **Neutron scattering angular distributions**
 - J. Nucl. Sci. Technol. paper by Kawano and Brown
- **Beta-delayed neutron, gamma, and fission**
 - produced large databases for r-process by Mumpower

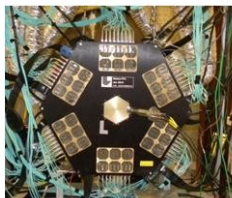
Reaction modeling
in close collaboration
with LASNCE experiments



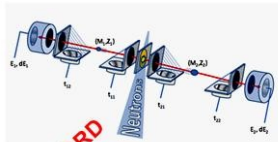
Nuclear Data Experiments at LANSCE, Lujan Center, Target 2 and 4



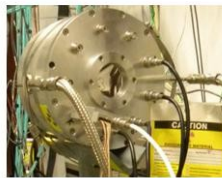
TPC



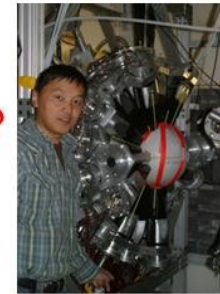
SPIDER



Double gridded ion chamber



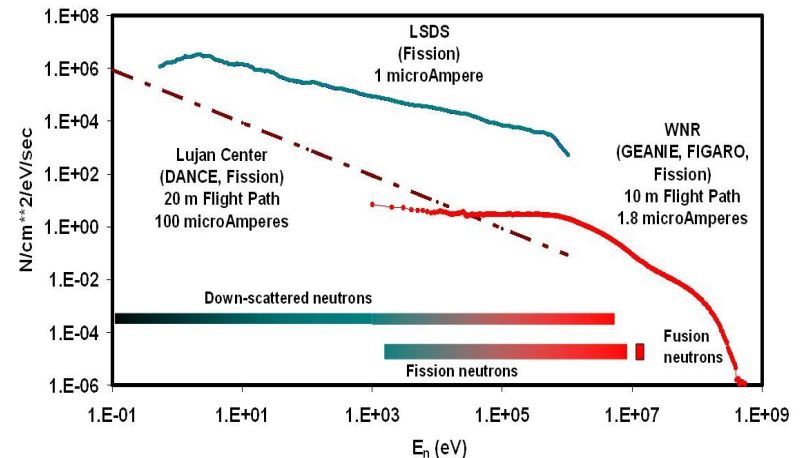
DANCE (n, γ)



GEANIE ($n, x\gamma$)



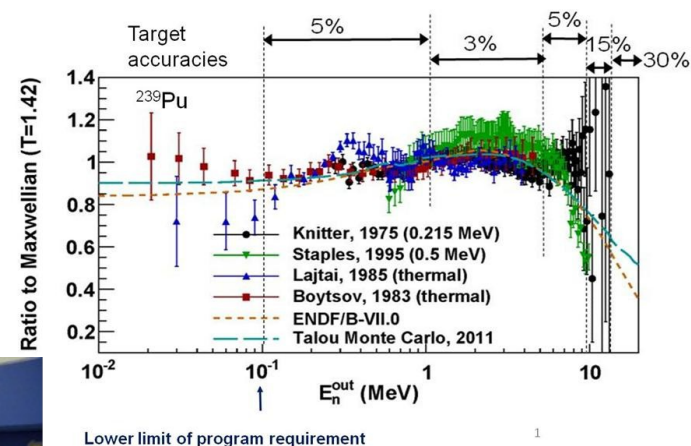
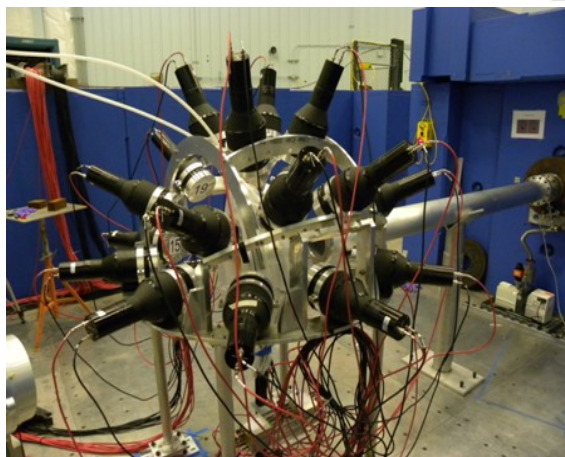
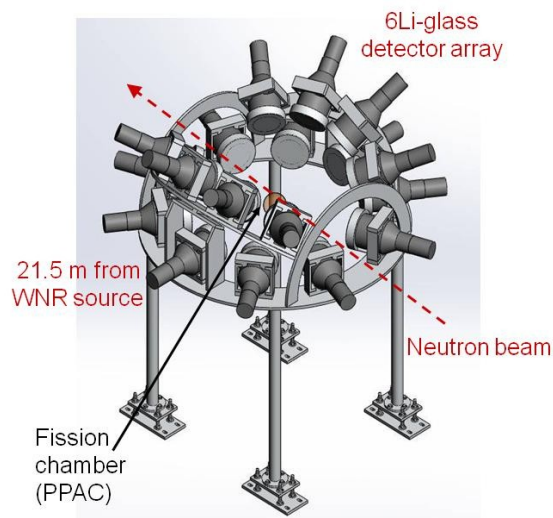
LANSCE Neutron sources



Chi-Nu Array of Fast Neutron Detectors

■ Detectors designed for fission neutron measurements

- 22 Li-6 glass scintillation detectors, or
- 54 liquid scintillation neutron detectors
- can be used for neutron inelastic scattering and other neutron emission measurements



FT14 Statistics

Evaluation	12
Compilation	0
Retrievals	0
Publications	17
Report	1
Invited Talks	21

	Head	FTE
Permanent Staff	10	1.1
Temporary Staff	3	0.2
Admin & Tech	0	0
Student	0	0