LANL Report

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Program Overview

Evaluation and Theory Development

- New Pu238 evaluations, including covariances
- Pu240 upgraded
- Ni58, Fe56, and V51 evaluations underway
- New covariance evaluations for H1, He4, Li6, and Am241
- Evaluation of fission spectrum covariances for Pu239
  - Nucl. Sci. Eng., **166**, (2010) [in press].
- Monte Carlo Hauser-Feshbach method
  - J. Nucl. Sci. Technol., **47**, 462 (2010).
- Hartree-Fock BCS + DSD extended for proton capture, and odd targets
  - Phys. Rev. C paper submitted

Program Overview, Cont'd

Code Development

- (TBD ver.1.0) Monte Carlo prompt fission neutron spectra continue
- CGM — β-delayed γ and neutron competition
  - two talks given:
    ND2010 Jeju, S. Korea (Kawano)
    Gamma-Strength Function and Level Density, Dresden, Germany (Holloway)
- CoH ver.3.1 (Ariel)
  - Monte Carlo method for correlated particle emissions
  - fission modeling improved
  - applications to radiation transport simulation as an event-generator
  - talk at SNA+MC2010, Tokyo, Japan (Kawano)
- DeCE — objective oriented ENDF-6 format manipulation program

Program Overview, Cont'd

LANSCE Experiments Activities

- Total cross section of ^{48}Ca, with Washington U. — 2.7 mg sample
- DANCE — neutron capture cross sections and ratio (n,γ)/(n,f)
  - ^{63}Ni, ^{89}Y, ^{94,95,97}Mo, $^{152,154-158}$Gd, ^{191,193}Ir, ^{233,235,238}U, ^{239,241}Pu, ^{242m,243}Am
- GEANIE — reaction cross sections and spectroscopy
  - ^{103}Rh(n,xnγ), ^{56}Fe(n,$\gamma\gamma$), ^{191,193}Ir, ^{197}Au

- FIGARO/χ-ν — Neutron emission spectra from fission
  - ^{235}U
  - ^{6}Li-glass detectors for $E_n < 1$ MeV
- Fission cross sections
  - ^{237}Np, ^{239,240,242}Pu, ^{233,238}U, ^{243}Am
  - TPC: Time-projection chamber

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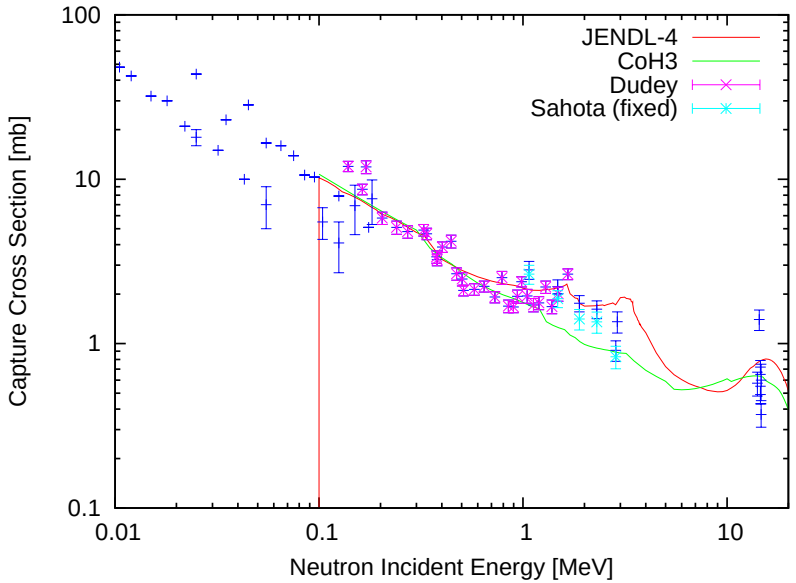
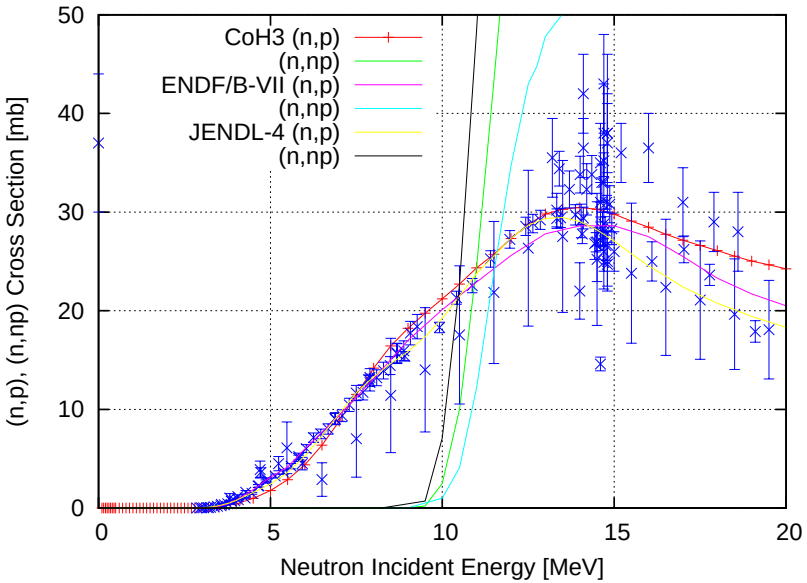
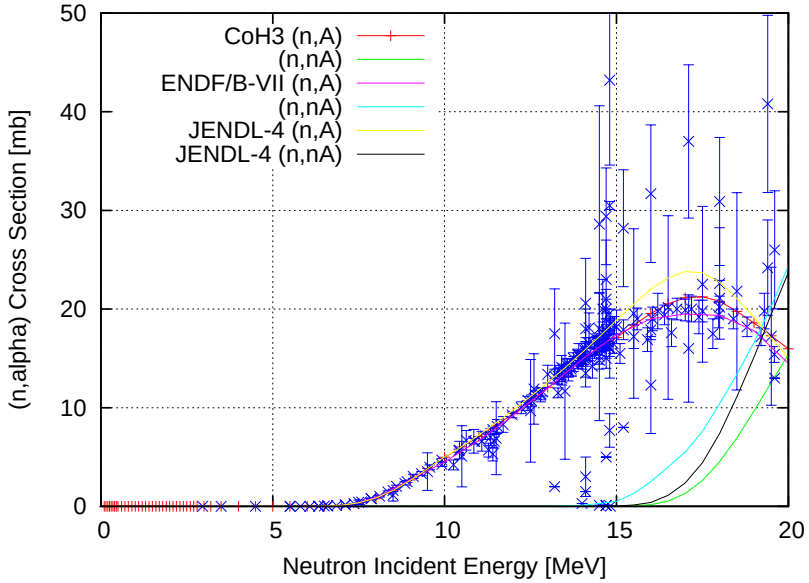
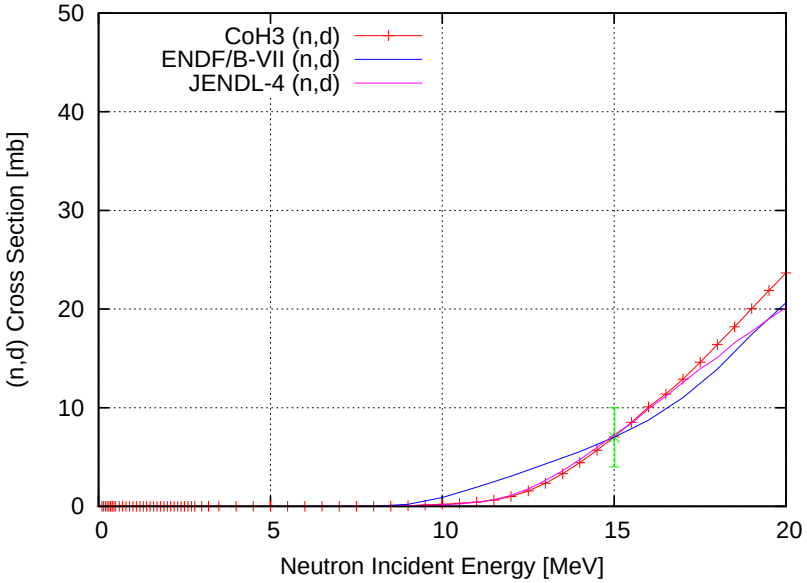
V-51 Evaluation — New CoH_3 Calculations









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DeCE: Descriptive Correction of ENDF-6 Format Code

New ENDF File Manipulation Code

- C++ code, written in an objective oriented manner
- facilitates all ENDF-6 data file manipulations, for example:
  - renumbering, add two data sections, renormalize data, add/delete data point, etc.
- convert model calculation results into ENDF-6 format
- convert ENDF-6 formatted data file into more human friendly format

```
% dece n-022_Ti_048.endf
calc 3 = 1+2
extract 3 3
```

```
 2.204800+4 4.755600+1          0          0          0           02231 3  3     1
 0.000000+0 0.000000+0          0          0          1         8582231 3  3     2
        858           2                                              2231 3  3     3
 1.000000-5 0.000000+0 2.530000-2 0.000000+0 3.000000+5 0.000000+02231 3  3     4
 3.000000+5 1.387156+0 3.061340+5 5.275690-1 3.120790+5 8.791720+02231 3  3     5
 3.224840+5 3.323740+0 3.269430+5 3.517390+0 3.314020+5 1.697865+02231 3  3     6
 3.373470+5 2.811980+0 3.432920+5 1.070824+1 3.477510+5 4.487680+02231 3  3     7
 ...
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Miscellaneous ...

Personnel Change

- S. Kunieda — Long Term Visitting Scientist from JAEA, Japan (Th)
- O. Bouland — back to CEA, Cadarache, France (Th)
- B. Perdue — new post-doc from Duke U. (Ex)
- Job opening — post-doc and staff member

Manpower Survey (2010)

	Head Count	FTE
Regular Staff Member (Theory)	6	0.7
Regular Staff Member (Experiment)	5	0.65
PostDocs (Theory)	1	0.1
PostDocs/Students (Experiment)	3 (1+2)	0.15

Manpower Survey (2011)

	Head Count	FTE
Regular Staff Member (Theory)	6	0.8
Regular Staff Member (Experiment)	5	0.5
PostDocs (Theory)	0	0
PostDocs/Students (Experiment)	3 (2+1)	0.4