

# TUNL Contributions in the US Nuclear Data Program

## **Nuclear Data Evaluation Program**

J.H. Kelley, H.R. Weller, Jim Purcell, and  
Grace Sheu, Elaine Kwan (50% NNSA)

## **Program on Preequilibrium Phenomenology**

Constance Kalbach Walker

# Nuclear Structure Evaluation

## TUNL Nuclear Data Evaluation Project

### Kelley, Weller

- We are responsible for nuclear structure evaluation in the  $A=2-20$  mass region
  - Energy Levels of Light Nuclei reviews published in Nuclear Physics A
  - ENSDF files for  $A=2-20$
- Web interface for  $A=3-20$  Information

# Evaluation Activities

- Energy Levels of Light Nuclei
  - Follow style of Fay Ajzenberg-Selove
  - Broad scope of reactions is included – discussion format.
  - Adopted levels/gammas, Energy Level Diagrams
- ENSDF
  - More rigorous information required
  - Better documentation of original sources
  - reaction data sets/decay data sets
  - Adopted levels/gammas, decay widths, etc.

# Recent Evaluation Activities

- Other work in progress:
  - *Energy Levels of Light Nuclei: A=11-13*
  - Complete *1<sup>st</sup>* draft of A=3 review for NPA publication
- Web
  - compilation of A=3-20 Decay information
    - $\beta$ -decay
    - Particle decay (unbound g.s.)

### TUNL Nuclear Data Evaluation

Information on mass chains and nuclides available on this website:

3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20

Group Info
Publications
HTML
General Tables
Level Diagrams
Tables of EL's
ENSDF
Thermal N Capt.
G.S. Decays
NuDat at BNL
Palm Pilot
Useful Links
Citation Examples

Home
SiteMap
Directory
Email

Search:



- [TUNL Nuclear Data Group](#): Who we are and what we do.

#### Our publications on Energy Levels of Light Nuclei, A = 5 - 20:



- [Publications](#): TUNL evaluations of A = 3 - 20, and modified versions of Fay Ajzenberg-Selove's publications of A = 5 - 20, are available here in PDF format. The most recent HTML documents of A = 3 - 20, and EL diagrams of A = 4 - 20 are also available here. Some reprints and preprints may be requested by mail.
- [HTML for Nuclides](#): HTML documents are available for individual nuclides found within the TUNL or FAS evaluations.

#### Resources relating to our publications:

- [General Tables](#): General Tables in HTML for A = 5 - 10 nuclei.
- [Energy Level Diagrams](#) are available for A = 4 - 20 nuclides.
- [Tables of Energy Levels](#): a brief listing of tables of energy levels from the most recent publication for each nuclide A = 4 - 20.
- [SiteMap and Complete List of Available TUNL Documents](#): Trying to find a specific TUNL evaluation or preliminary report, HTML document, General Table, Update List or Energy Level Diagram? Click here for a complete list of what's available on our website.

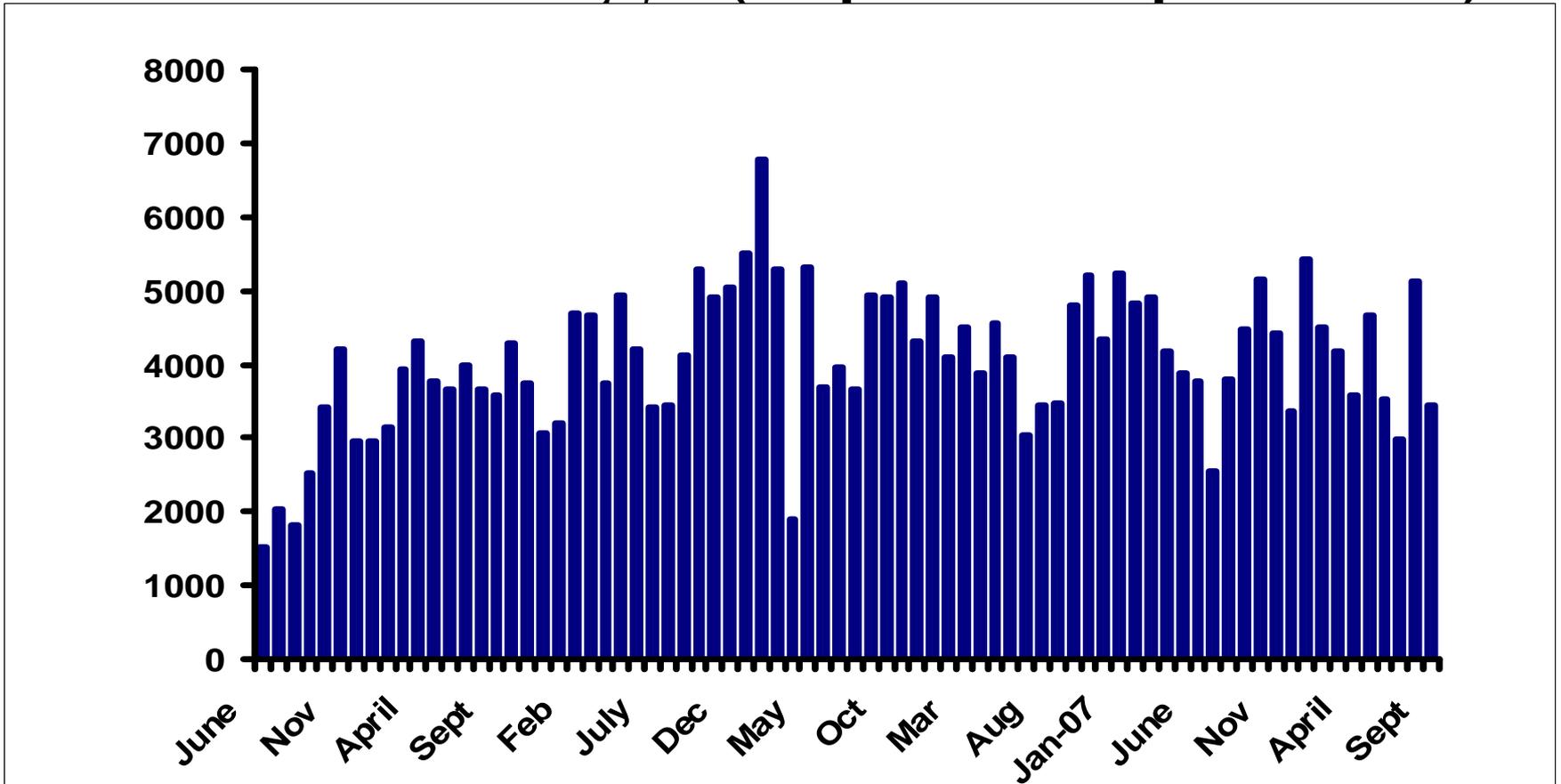
#### Applications and databases relating to the A = 3 - 20 nuclides:

- [ENSDF](#): Information for A = 2 - 20 nuclides available through the National Nuclear Data Center (NNDC) site.
- [Thermal Neutron Capture Data](#): Summary of level and branching intensity data measured in Thermal Neutron Capture.
- [NEW](#) [Ground-State Decay Data](#): Summary of half-life, branching intensity, and mass excess data measured in ground state beta- and charged-particle-decay.
- [NuDat at BNL](#): Allows to search and plot nuclear structure and nuclear decay data interactively.
- [Palm Pilot Physics Page](#): Links to Palm applications and databases that are of interest to the Nuclear Physics community.

#### Helpful links:

- [Links](#) Important links to the National Nuclear Data Center, online nuclear physics journals, and other useful sites.
- [Citation examples](#) A brief listing of examples of how to format your bibliography, references or citations from the information you obtain from our website.

# WWW usage (April 02-present)



Using Analog - finding issues with excluding new search engine "robots"

New server April 05/partial records

# TUNL Program on Preequilibrium Phenomenology

(Constance Kalbach Walker)

Program involves development of

- Exciton preequilibrium model and code
- Additional direct reaction models for complex particle channels

(Current version is PRECO-2006)

## 2007-2008 Progress

- Supplied “blind” preequilibrium model predictions for comparison with newly measured spectra from  $(n,xn)$  at 96 MeV and results of other codes.
- Continued developing model for **projectile break-up** for d, He-3, and  $\alpha$  induced reactions

## Future Plans

- Complete development and implementation of **breakup model**.  
Part of CRP on FENDL-3 (Fusion Evaluated Nuclear Data Library). Deuteron breakup model is essential for including deuteron induced reactions.
- Other projects as need and opportunity arise.