

TUNL Contributions in the US Nuclear Data Program

Nuclear Data Evaluation Program

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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

- ENSDF A=10 added to ENSDF
- Other work in progress:
 - *Energy Levels of Light Nuclei: A=11-13*
 - Evaluation of A=3 for publication in NPA
- Web
 - compilation of A=3-20 β -decay information

Energy Levels of Light Nuclei, $A = 3 - 20$

Nuclear Data Evaluation Project

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 |

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|-------------------|
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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.
- **Update Lists:** contain important papers published since the most recent evaluation of each nucleus and are available for $A = 3 - 16$ 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.

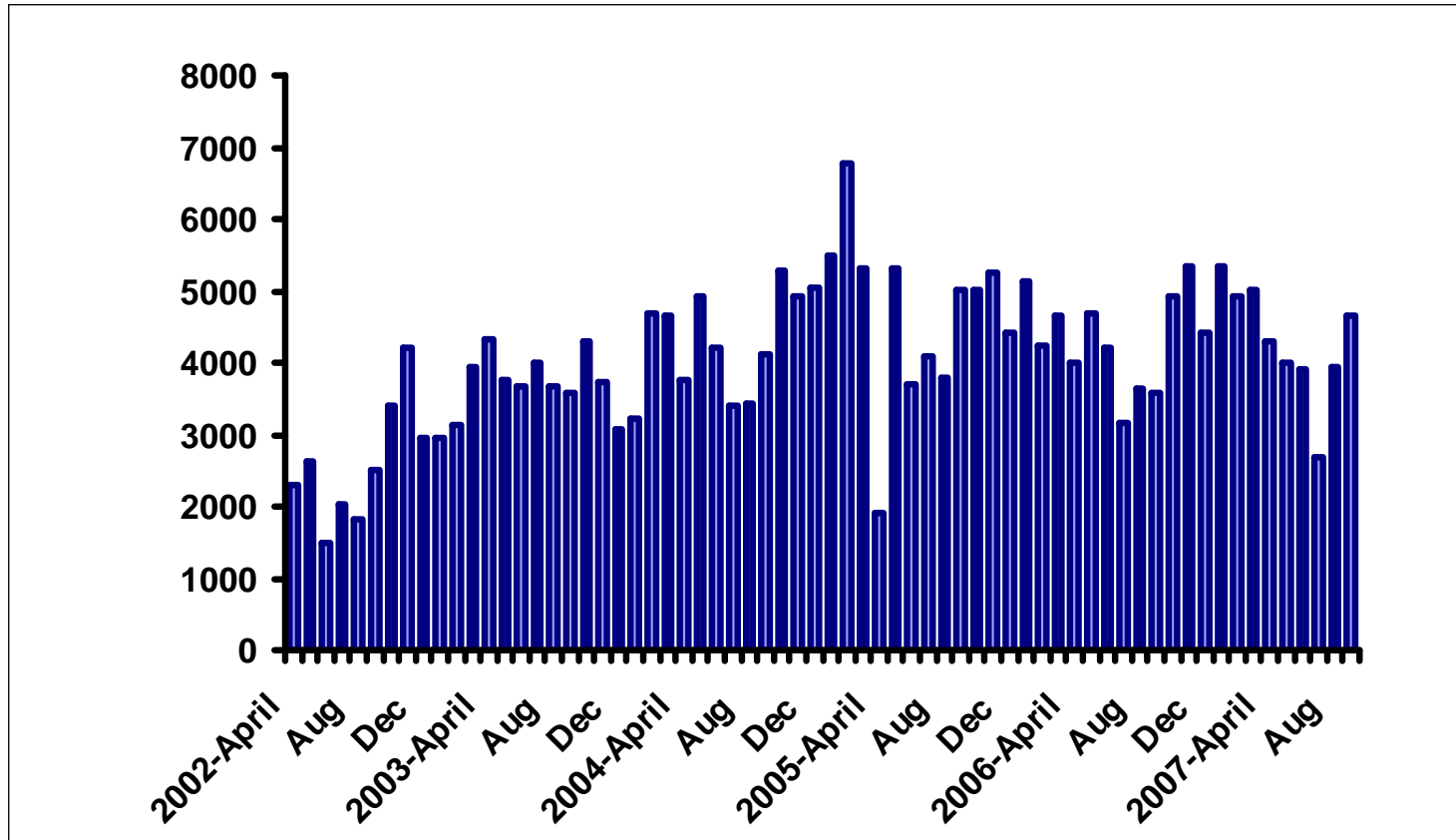
Applications and databases relating to the $A = 3 - 20$ nuclides:

- **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 Beta Decays Data:** Summary of half-life and branching intensity data measured in Beta Decays.
- **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.
- **Directory**
- **Email us** with problems, questions, suggestions, etc.

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)

- Exciton preequilibrium model and code
- Additional direct reaction models for complex particle channels
- Current version: PRECO-2006

2006-2007 Progress

- Cleaned up and tested **code PRECO-2006**
- Completed **User's Manual** and released code (through NNDC; RSICC at ORNL)
- Worked on model for **projectile break-up** for d, He-3, and alpha induced reactions

Future Plans

- Complete **breakup model**; include in PRECO (absorbed fragment to initiate exciton model equilibration calculation)
- Examine impact on **initial configuration** in exciton model with complex projectiles
[Complex projectiles a strength of PRECO]
- Benchmark code for (n,n') reactions at $E_{\text{inc}} = 70\text{-}200 \text{ MeV}$