TUNL Contributions in the US Nuclear Data Program

Nuclear Data Evaluation Program

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Program on Preequilibrium Phenomenology

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Nuclear Structure Evaluation
TUNL Nuclear Data Evaluation Project
Kelley, Tilley, 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

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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.

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Recent Evaluation Activities

- *Energy Levels of Light Nuclei:A=8-10*
  Nuclear Physics A **745** (2004) pp.155-362.
  (collaboration with D.J. Millener)
- A=8 ENSDF file accepted at NNDC
- Other work in progress:
  - Evaluation of A=3 for publication in NPA
  - Evaluation of A=11(then 12) for "Energy Levels"
  - prepare A=9-10 ENSDF files

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Triangle Universities Nuclear Laboratory — Duke, UNC, TUNL, NCSU

Energy Levels of Light Nuclei, A = 3 - 20

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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
Update Lists
Level Diagrams
Tables of EL's
ENSDF
Palm Pilot
Table of Isotopes
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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 - 10 and A = 16 - 20, and modified versions of Fay Ajzenberg-Selove's publications of A = 5 - 20, are available here in PDF format. 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.

• Palm Pilot Physics Page: Links to Palm applications and databases that are of interest to the Nuclear Physics community.

• Table of Isotopes v. 1.0 (1996): This short version contains only information on A = 1 - 20 isotopes.

Helpful links:

• Links Important links to the National Nuclear Data Center, online nuclear physics journals, and other useful sites.

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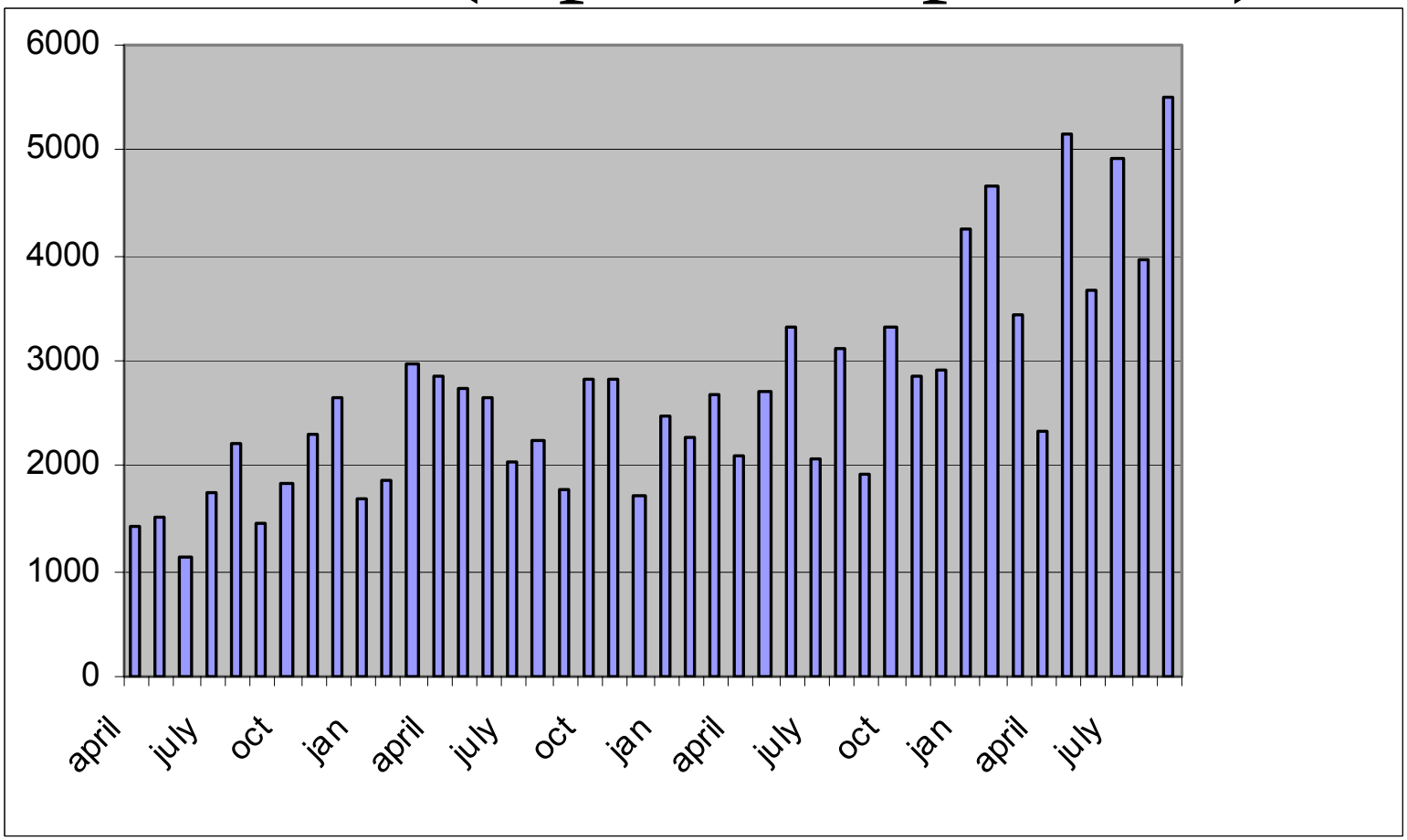
WWW (April 02 –present)



TUNL Program on Preequilibrium Phenomenology

(Constance Kalbach Walker)

- Exciton preequilibrium model and code
- Additional direct reaction models for complex particle channels
- Working toward new release of PRECO

2004-2005 PROGRESS
(Year of Consolidation)

- Paper on complex particle channels
  Phys. Rev. C (Mar ’05)
- Paper on isospin conservation
  Phys. Rev. C (Aug ’05)
- Paper on spectral endpoint & missing residual states – submitted to Phys. Rev. C

FUTURE PLANS
(Funding permitting)

- New release of code PRECO, users manual
- Energy dependence of collective excitation model
- Extend breakup model from deuterons to He-3 and alpha particles
  Absorbed fragment to initiate exciton model equilibration calculation
  [Unique strength of PRECO]