XUNDL status report

(Includes compilation of recent mass measurement papers)

(April 1, 2009 – March 31, 2011)

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Purpose and scope of XUNDL

- Provides prompt and convenient web access to current publications in experimental nuclear-structure data (level-scheme information) through on-line retrieval systems at BNL; RADWARE at ORNL and Isotope-Explorer at LBNL.

- ENSDF-formatted datasets compiled from one paper, or a set of related papers from the same group.

- Covers recent experimental structure papers mainly in PRL, PR-C, EPJ-A, NP-A, PL-B, JP-G, IJMP-E, CPL. Almost daily scans of journal web pages. Papers generally compiled prior to entry of references in NSR.

Participants in XUNDL work

- McMaster: A. MacDonald, B. Karamy, J. Choquette, J. Chen, B. Singh
- TUNL: J. Kelley, G. Sheu, J. Purcell : A=2-20 mass region
- ANL : F. Kondev, G. Gurdal: NP-A, PL-B, JP-G journals
- LBNL: C. Baglin
- U. of Jordan: K. Abusaleem
- PAN, Krakow: K. Zuber
- IEP, NAS, Ukraine: D. Symochko
- US Naval Academy: D. Hartely

- Management of the database at NNDC: J. Tuli
- Online database update at NNDC: R. Arcilla, B. Pritychenko, T. Johnson

Procedures

- Commercial code Finereader used to create tabular text files from PDF files in journal web pages
- TABULAR-TEXT to ENSDF conversion code, developed at McMaster, used to generate draft ENSDF-formatted datasets
- Datasets run through codes such as FMTCHK and GTOL
- BRICC and LOGFT codes used for decay datasets
- Level schemes, bands and numerical data in the compiled dataset run through the ISOTOPE-EXPLORER code or PANDORA. Finally all data transcription checked manually.
- Data-related discrepancies/inconsistencies and requests for additional data details are resolved with original authors via e-mail communication

Current Contents of XUNDL

- Since the start in December 1998,
  4064 compiled datasets added up to March 31, 2011.
- Covers mainly high-spin structures up to 2003.
- Almost all experimental structure papers from major journals between 2004 - 2011.
- **1953** nuclides: ^{1}H to ^{294}118, spread over **273** A-chains;
  some datasets for hypernuclides also.
- Data from 2650 primary journal articles published during 1995 – 2011
- About 400 communications with the original authors to resolve data inconsistencies and to obtain additional data details. We consider this part of the activity as important, timely and advantageous in future ENSDF evaluations.

Compilations during April 1, 2009 to March 31, 2011

- **1088** datasets compiled from about **450** publications

  881 at **McMaster**, includes collaborative work with other centers: **44** datasets at U. of **Jordan; 49** at **Krakow**; **2** at **Ukraine**

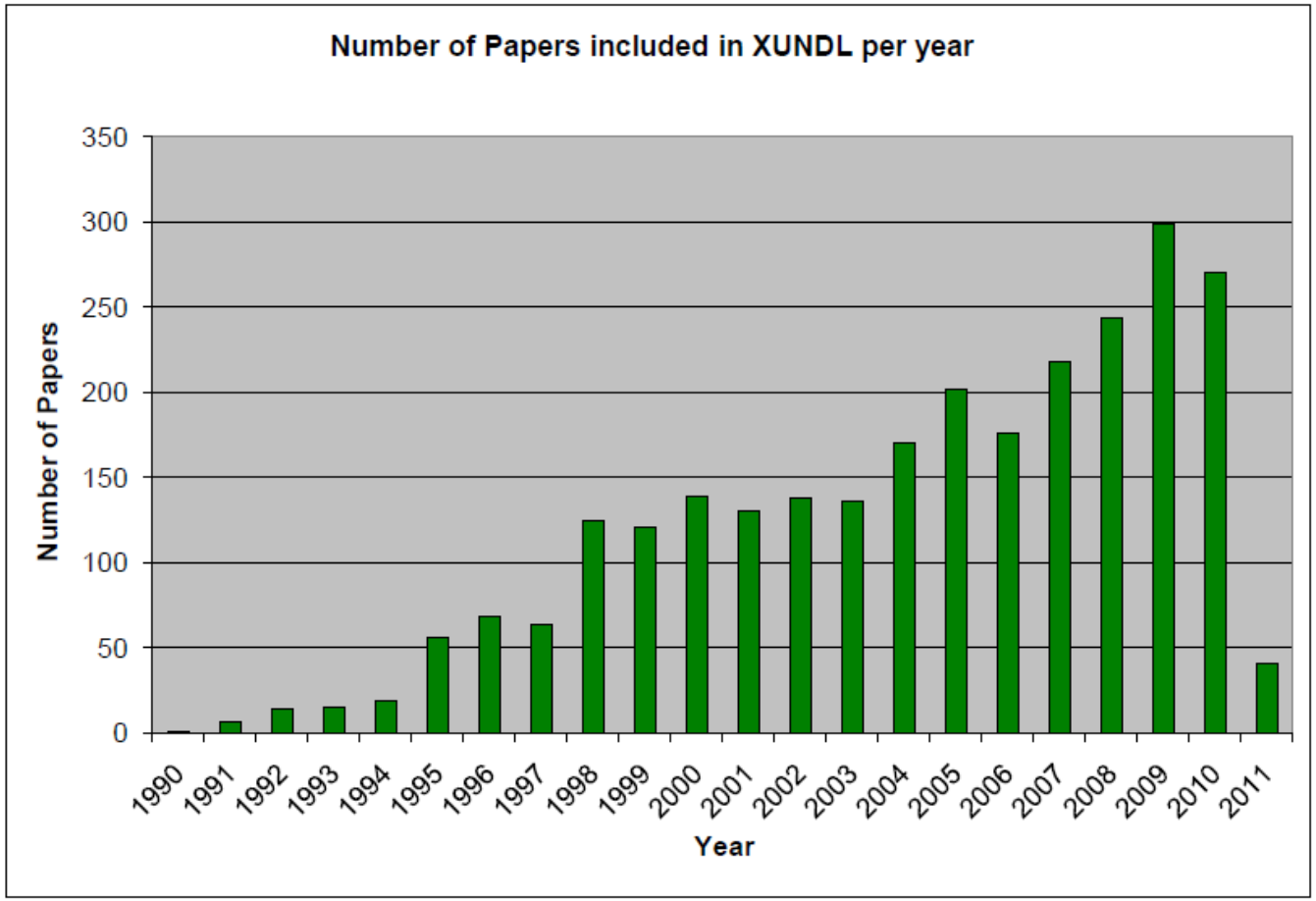
  125 datasets at **TUNL**; **66** at **ANL**; **10** at **LBNL**;
  6 at **US Naval Academy** in co-operation with ANL and McMaster

- ~100 existing datasets were updated based on new papers from previous authors/groups, errata published or for additional information received from authors as e-mail replies.

- Since Nov 2007, we revisit compiled datasets to identify permanent NSR key-numbers.

- As of March 31, 2011 we are up-to-date on the compilation of current papers, except for about 15 papers (to be compiled at different centers) .

Papers compiled for XUNDL



Communication with authors

- Active communications with the authors continued throughout the last two years. In some cases such communications prompted authors to publish errata. In some papers we pointed out mistakes which got corrected in transition from “accepted” version to final publication.

Researchers' use of XUNDL database as data repository

- First example was : J.P. Schiffer et al., PRL 100, 112501 (2008)
- With pre-arrangement, data tables for 4 PRC/PRL papers published in 2008-2010 now exist only in XUNDL; 3 such papers were added in 2009-2010
- XUNDL database can serve as a repository of relevant data details for a publication which are not included in a publication.

Compilation of Atomic mass measurements since AME-2003

- 43 papers from 2009-2011 compiled with about 220 data points corresponding to new mass measurements.
- These data were made available on an ORNL webpage: www.nuclearmasses.org