

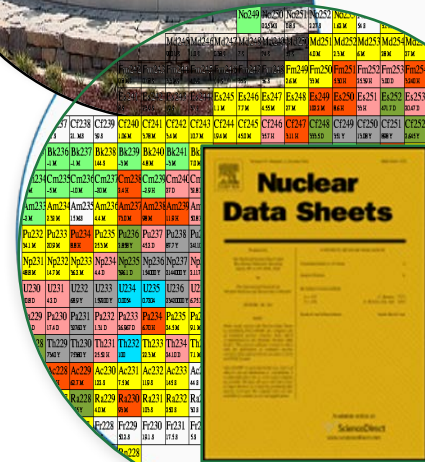
STATUS REPORT ON NUCLEAR STRUCTURE AND DECAY DATA ACTIVITIES AT OAK RIDGE NATIONAL LABORATORY

21st Technical Meeting of the
Nuclear Structure and Decay Data
(NSDD) Network

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Eric Lingerfelt , Chris Smith
& Murray Martin



NUCLEAR DATA
PROGRAM



Members:

- **Michael Smith:** Group Leader for Experimental Astrophysics & Nuclear Data - nuclear astrophysics data, online software systems
- **Caroline Nesaraja:** Research Staff Member - ENSDF evaluator, XUNDL compiler, and experimentalist
- **Murray Martin:** Subcontractor - ENSDF evaluator and consultant
- **Eric Lingerfelt:** Lead Software Developer - online software systems
- **Chris Smith:** Student - nuclear astrophysics data and XUNDL Compiler
- **Jon Batchelder:** Subcontractor-XUNDL Compiler and experimentalist (Oct 2014-April 2015)

Activities:

- Nuclear Structure Data (**ENSDF and XUNDL**)
- Nuclear Astrophysics Data
- Online Software Systems
- Experiments to supplement USNDP databases

Nuclear Structure Data:



Mass Chain Evaluation

ORNL responsibility: A=241-249

Mass Chain

Current ENSDF Database (from NNDC website)

241*	M.J. Martin. NDS 106, 89 (2005)	(Lit cut-off June, 2005)
242*	Y. A. Akovali. NDS 96, 177 (2002)	(Lit cut-off Sept., 2001)
243	C.D. Nesaraja & E.A. McCutchan. NDS 121, 695 (2014)	(Lit cut-off Sept., 2013)
244*	Y. A. Akovali : NDS 99, 197 (2003)	(Lit cut-off June, 2002)
245	E. Browne & J.K. Tul. NDS 112,447 (2011)	(Lit. cut-off June, 2010)
246	E. Browne & J.K. Tuli. NDS 112,1833 (2011)	(Lit. cut-off Jan., 2011)
247	C. D. Nesaraja :NDS 125, 395 (2015)	(Lit. cut-off March, 2014)
248	M.J. Martin :NDS 122, 377 (2014)	(Lit. cut-off Sept., 2014)
249	K. Abusaleem: NDS 112, 2129 (2011)	(Lit. cut-off Dec. 2010)

* Under various stage of ENSDF processing

ENSDF

1. Evaluations

Status of mass chain evaluations since the last NSDD meeting in 2013

Mass Chain	Evaluator	#Nuclides	#Ref.	Status
41	McCutchan & Nesaraja	10		Under evaluation
69*	Nesaraja	13	247	Published
152	Martin	16	623	Published
241	Nesaraja	8	223	In Review
242	Martin			Under evaluation
243	Nesaraja & McCutchan	8	233	Published
247	Nesaraja	8	102	Published
248	Martin	7	76	Published

* Updated ^{69}Br and ^{69}Kr (April 2015) available online at NNDC website

2. **Reviews** A=54, A= 87, A=209

3. **Guidelines for Evaluators** (Draft Version, April, 2015): Murray Martin

Providing prompt and convenient experimental nuclear-structure data of current publications in collaboration with Balraj Singh

Caroline Nesaraja- since Oct. 2013

Chris Smith- since August 2014 (trained by C. Nesaraja)

Jon Batchelder- Oct-Dec 2014

Status of XUNDL compilations:

68 datasets (33 papers)
(4 with McMaster)

XUNDL: FY2014

154Ho: 141Pr(16O,3n)154Ho (2013MoAA)
84Ge: 84Ga β decay (2013KoAA)
83Ge: 84Ga β -n decay (2013KoAA)
123Cs: 96Zr(32S,p4n γ) (2013Se14)
124Ba: 96Zr(32S,4n γ) (2013Se14)
146Eu:146Gd EC decay (2013Bh07)
44Ti: 40Ca(α,γ)44Ti (2013Sc16)
142Sm: 116Cd(31P,p4n) (2014Ra03)
26Mg: 18O(13C, $\alpha n\gamma$) (2014Bh03)
208Pb:208Pb(p,p') (2014He14)
208Pb:207Pb(d,p) (2014He14)
254Md: 258Lr α decay (2014Ha04)
258No: 258Lr ϵ decay (2014Ha04)
258Lr: 262Db α decay (2014Ha04)
262Db: 248Cm(19F, 5n) (2014Ha04)
238U: 238U(n,ng) (2014Go06)
133Sn:9Be(132Sn,8Be) (2014Al07)
209Pb:9Be(208Pb,8Be) (2014Al07)
131Sn:9Be(132Sn,10Be) (2014Al07)
177Hf:Ta(p,Xg) (2014Mu03)
180Hf:Ta(p,X) (2014Mu03)
23Mg:1H(22Na,p)Res (2013JI13)
97Rb:241Pu(n,Fg) (2013Ru07)
97Sr: 97Sr IT decay (2013Ru07)
199At: 165Ho(40Ar,6n) (2014AuAA)
201At: 165Ho(40Ar,4n) (2014AuAA)
78Kr: Coulomb Excitation (2014KU10)
86Kr: Coulomb Excitation (2014KU10)
82SR: 12C(78Kr,2a γ) (2014KU10)
90SR: 12C(86Kr,2a γ) (2014KU10)

XUNDL: FY2015

66Ge: Coulomb Excitation (2013Co23)
66Ge: 9Be(66Ge,Ge' γ) (2013Co23)
66Ge: 9Be(67As,Ge' γ) (2013Co23)
67As: Coulomb Excitation (2013Co23)
67As: 9Be(67As,67As' γ) (2013Co23)
41Sc: 40Ca(p, γ) (2014Sc05)
220Th: 224U α decay (2014Lo10)
221Th: 206Pb(22Ne,X) (2104Lo10)
37Mg: C(37Mg,37Mgg) (2014Ko14)
36Mg 206Pb(22Ne,X) (2014Ko14)
208Pb: 208Pb(p,p') (2014He09)
207Pb: 207Pb(p,p') (2014He09)
48Ca: 48Ca($\alpha,\alpha'\gamma$) (2014De04)
240Pu: 240Pu SF Decay (2013Sa65)
242Pu: 242Pu SF Decay (2013Sa65)
27P: Coulomb Excitation (2013Xu13)
28S: Coulomb Excitation (2013Xu13)
35Si: 2H(34Si,p) (2014Bu01)
37S: 2H(37S,p) (2014Bu01)
107In: Coulomb Excitation (2013Di01)
58Ti: 1H(58Ti,58Ti' γ)(2013SU20)
45Fe: Ni(58Ni,X) (2012Au08)
45Fe2p (2012Au08)
43Cr: Ni(58Ni,X) (2012Au08)
42Ti: 43Crb+p Decay(2012Au08)
41Sc: 43Crb+2p Decay(2012Au08)
40Ca: 43Crb+3p Decay(2012Au08)
49Mn: 43Crb+p Decay(2012Au08)
51Ni: Ni(58Ni, X) (2012Au08)
24Mg: 93NB(24MG,24MG' γ):(2015Ku05)
147Pm:151Eu A Decay: (2012Da16)
149Pm:153Eu A Decay: (2012Da16)
149Sm:149 B Decay: (2012Da16)
122Te: 122I[+53] B+ Decay (2012At01)
122Te: 122I[+52] EC Decay (2012At01)
9Be(132Xe, X) (2012At01)

Personnel

- Michael Smith: 0.1 FTE (Nuclear Astrophysics Data), 0.05 FTE (Online Software Systems), 0.05 FTE (National Coordination)
- Caroline Nesaraja: 0.8 FTE (ENSDF), 0.2 FTE (XUNDL)
- Murray Martin: 0.15 FTE (ENSDF)
- Eric Lingerfelt: 0.25 FTE (Online Software Systems)
- Chris Smith: 0.8 FTE (Computational Astrophysics), 0.2 (XUNDL)
- Jon Batchelder: 0.5 FTE (XUNDL, Horizontal Structure Evaluation: Oct 2014-April 2015)