

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

23rd Technical Meeting of the
Nuclear Structure and Decay Data
(NSDD) Network

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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 (till September 2018)
- **Murray Martin:** Subcontractor - ENSDF evaluator and consultant
- **Larry Zhang :** Student - nuclear astrophysics data

Activities:

- Nuclear Structure Data (ENSDF and XUNDL till Sept. 2018)
- Nuclear Astrophysics Data

Nuclear Structure Data:

Mass Chain Evaluation

ORNL responsibility: A=241-249



Mass Chain

Current ENSDF Database (from NNDC website)

241	C.D. Nesaraja. NDS 130, 183 (2015)	(Lit cut-off Sept, 2015)
242*	Y. A. Akevali. 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	C.D. Nesaraja : NDS 146, 387 (2017)	(Lit cut-off August, 2017)
245	E. Browne & J.K. Tuli. 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)

* Will be updated soon (under post-review stage)

ENSDF

1. Evaluations

Status of mass chain evaluations since the last NSDD meeting in 2017

Mass Chain	Evaluator	#Nuclides	Status
137	Nesaraja	16	Submitted
244	Nesaraja	9	Published
242	Martin	9	Post Review

2. Reviews:

M. Martin (A=126)

C. Nesaraja (A=76, 197 and 217)

3. Guidelines for Evaluators : M. Martin (under final revision)

Providing prompt and convenient
experimental nuclear-structure data of
current publications

Caroline Nesaraja
Oct. 2013- Sept 2018

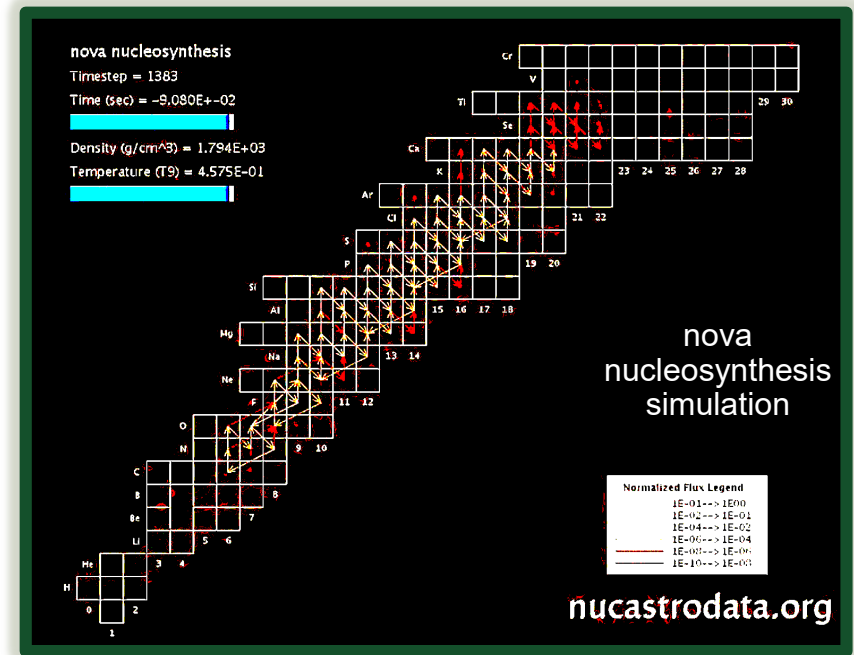
Status of XUNDL compilations:

Due to a request from the new XUNDL manager in April 2016 for ORNL to either stop this effort entirely or reduce our XUNDL effort, the number of papers compiled by ORNL have decreased since FY2017. As of FY2019, ORNL has opted to stop but will compile any paper as requested by NNDC.

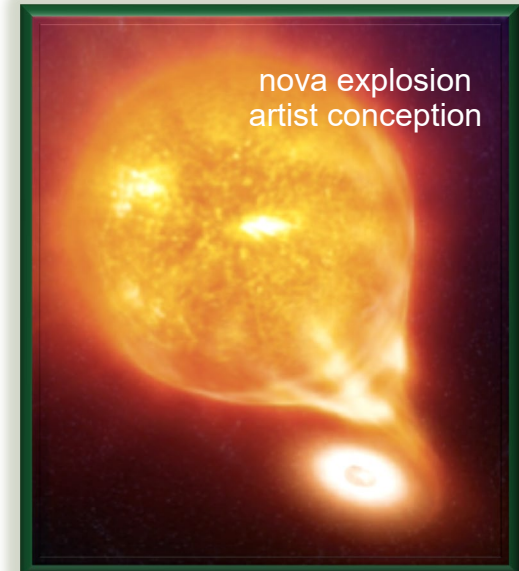
Nuclear Astrophysics Data:

Assessing uncertainties of reactions critical for nucleosynthesis in Nova Explosions

p(p,g)d	o16(p,g)f17	mg25(p,g)al26	ar36(p,g)k37
p(p,g)d	o16(a,g)ne20	mg25(p,g)al-6	ar38(p,g)k39
d(p,g)he3	o17(p,g)f18	mg25(p,g)al*6	k35(p,g)ca36
d(a,g)li6	o18(p,g)f19	mg26(p,g)al27	k39(p,g)ca40
t(p,g)he4	o18(a,g)ne22	al23(p,g)si24	ca39(p,g)sc40
t(a,g)li7	f17(p,g)ne18	al24(p,g)si25	ca40(p,g)sc41
he3(a,g)be7	f18(p,g)ne19	al25(p,g)si26	ca40(a,g)ti44
li6(p,g)be7	f19(p,g)ne20	al26(p,g)si27	li6(p,a)he3
li7(a,g)b11	ne19(p,g)na20	al-6(p,g)si27	li7(p,a)he4
li7(p,g)be8	ne20(p,g)na21	al27(p,g)si28	be9(p,a)li6
be7(p,g)b8	na20(p,g)mg21	si26(p,g)p27	b10(p,a)be7
be7(a,g)c11	p28(p,g)s29	si27(p,g)p28	b11(p,a)be8
be9(p,g)b10	cl33(p,g)ar34	si28(p,g)p29	n14(p,a)c11
b10(p,g)c11	ar37(p,g)k38	si29(p,g)p30	n15(p,a)c12
b11(p,g)c12	k37(p,g)ca38	si30(p,g)p31	o17(p,a)n14
c12(p,g)n13	ne20(a,g)mg24	p27(p,g)s28	o18(p,a)n15
c12(a,g)o16	ne21(p,g)na22	p29(p,g)s30	f18(p,a)o15
c13(p,g)n14	ne22(p,g)na23	p31(p,g)s32	f19(p,a)o16
c14(p,g)n15	ne22(a,g)mg26	s30(p,g)cl31	ne18(a,p)na21
c14(a,g)o18	na21(p,g)mg22	s31(p,g)cl32	ne20(p,a)f17
n13(p,g)o14	na22(p,g)mg23	s32(p,g)cl33	na23(p,a)ne20
n14(p,g)o15	na23(p,g)mg24	cl31(p,g)ar32	mg24(p,a)na21
n14(a,g)f18	mg22(p,g)al23	cl32(p,g)ar33	al27(p,a)mg24
n15(p,g)o16	mg23(p,g)al24	cl35(p,g)ar36	p31(p,a)si28
n15(a,g)f19	mg24(p,g)al25	ar34(p,g)k35	cl35(p,a)s32
o15(a,g)ne19	mg24(a,g)si28	ar35(p,g)k36	



examining literature assessments of uncertainties of these rates



nova explosion artist conception