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

25th Technical Meeting of the
Nuclear Structure and Decay Data
(NSDD) Network

Caroline Nesaraja, Michael Smith

U.S. DEPARTMENT OF ENERGY

Members:

- Michael Smith: PI Nuclear Data Program – Nuclear astrophysics experiment and data

- Caroline Nesaraja: Research Staff - ENSDF evaluator

- Larry Zhang : Student - nuclear astrophysics data

Activities:

- Nuclear Structure Data (ENSDF)

- Nuclear Astrophysics Data

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Nuclear Structure Data:

Mass Chain Evaluation

ORNL responsibility: A=241-249, A=69

Nuclear Structure and Nuclear Astrophysics Group
Nuclear Data Group

About   Research Areas ▾   Staff   Publications

Mass Chain	Current ENSDF Database (from NNDC website)	
241	C.D. Nesaraja. NDS 130, 183 (2015)	(Lit cut-off Sept. 2015)
242	M.J. Martin & C.D. Nesaraja. NDS 186, 263 (2002)	(Lit cut-off Dec. 2021)
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 Aug. 2017)
245	C.D. Nesaraja. NDS 189, 1 (2023)	(Lit. cut-off Feb. 2023)
246	C.D. Nesaraja (post review edits submitted to NNDC)	(Lit. cut-off Jul. 2022)
247	C.D. Nesaraja. NDS 125, 395 (2015)	(Lit. cut-off Mar. 2014)
248	M.J. Martin. NDS 122, 377 (2014)	(Lit. cut-off Sept. 2014)
249	C.D. Nesaraja. (to be published)	(Lit. cut-off Oct. 2023)
69	C.D. Nesaraja. (submitted to NNDC)	(Lit. cut-off Apr. 2023)

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FTE (ENSDF) : 1.0

Mass Chain	Evaluator	#Nuclides	Status
69	Nesaraja	13	Review
246	Nesaraja	9	Editorial Review
249	Nesaraja	11	To be published

A=66 and 137 : post-review pipeline

Review one mass chain a year

A=69

A=246

A=249

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Other Activities related to Nuclear Data

Nuclear Science Advisory- Nuclear Data Subcommittee was formed in 2022

to assess challenges, opportunities, and priorities for effective stewardship of nuclear data.

First Report of the Nuclear Data Charge
Subcommittee of the
Nuclear Science Advisory Committee

September 19, 2022

Subcommittee Chair: Lee Bernstein (UC-Berkeley/LBNL)

Subcommittee Members:
Friederike Bostelmann (ORNL), Mike Carpenter (ANL), Mark Chadwick (LANL),
Max Fratoni (UC Berkeley), Ayman Hawari (NC State), Lawrence Heilbronn (UT-Knoxville),
Calvin Howell (Duke), Jo Ressler (LLNL), Cynthia Keppel (Jefferson Lab),
Arjan Koning (IAEA), Ken LaBel & Tom Turflinger (NASA & Aerospace),
Caroline Nesaraja (ORNL), Syed Qaim (FZJ), Catherine Romano (Aerospace),
Artemis Spyrou (MSU), Sunniva Siem (Univ. of Oslo), Cristiaan Vermeulen (LANL),
Ramona Vogt (LLNL/UC Davis)

Second Report of the Nuclear Data Charge
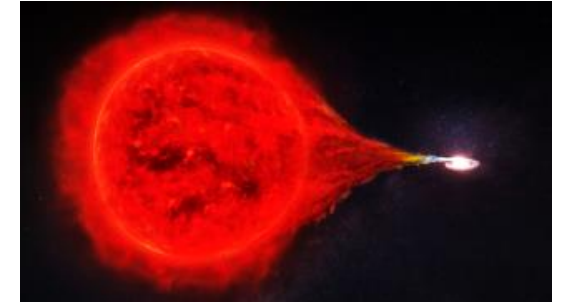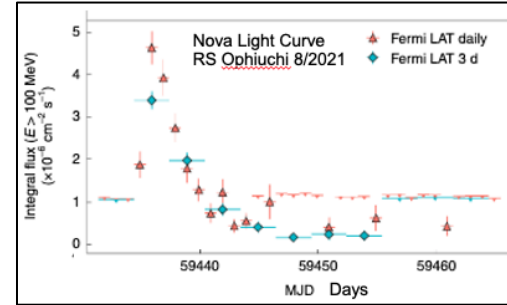Subcommittee of the
Nuclear Science Advisory Committee

February 4, 2023

Subcommittee Chair: Lee Bernstein (UC-Berkeley/LBNL)

Subcommittee Members:
Friederike Bostelmann (ORNL), Mike Carpenter (ANL), Mark Chadwick (LANL),
Max Fratoni (UC Berkeley), Ayman Hawari (NC State), Lawrence Heilbronn (UT-Knoxville),
Calvin Howell (Duke), Jo Ressler (LLNL), Cynthia Keppel (Jefferson Lab),
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Ramona Vogt (LLNL/UC Davis)

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Nuclear Astrophysics Data:

Assessing uncertainties of reactions
critical for nucleosynthesis in Stellar Explosions

Nova RS Ophiuchi erupted in 8/2021

Thermonuclear Reaction Rate Uncertainties

• new thermonuclear reaction rate uncertainties are currently being tested in an uncertainty quantification (UQ) analysis of nova nucleosynthesis

Nuclear Astrophysics Data Needs Summarized

• two review articles published with over 330 references