Mengke Li

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EXPERIENCE

2023.11 – Present	N3AS Postdoctoral Fellow, University of California, Berkeley / University of Notre Dame
2024.02 – 2024.05	Visiting Postdoc, University of Washington, WA
2022.05 – 2023.08	Graduate Research Assistant, Los Alamos National Laboratory, NM
2018.08 – 2023.11	Research and Teaching Assistant, Clemson University, SC

EDUCATION

2018 – 2023	Ph.D., Physics, Clemson University, Clemson, SC, USA
2014 – 2018	B.Sc., Physics, Zhengzhou University, ZhengZhou, CN

PUBLICATIONS

M. Li, B. Meyer. Neutron Economy in Late Time r-process Nucleosynthesis. *In prep* (2025)

M. Li, M. Mumpower, N. Vassh, R.Surman. Machine Learning β^- decay Half Life and the Impact on the Kilonovae Light Curve *In prep* (2025)

M. Li, R.Surman, G. McLaughlin. The impact of N = 126 closed shell on third r-process peak *Submitted* (2025)

M. Li, M. R. Mumpower, N. Vassh, W. S. Porter, R.Surman. Constraining Nuclear Mass Models Using r-process Observables with Multi-objective Optimization *Physical Review Research Letter* (2025)

M. Li, B. S. Meyer. Graph-based recursive relations for computing and analyzing r-process abundances, *The Astrophysical Journal* (2025).

W. S. Porter, B. Liu, D. Ray, A. A. Valverde, **M. Li**, M. R. Mumpower, et al. Investigating the effects of precise mass measurements of Ru and Pd isotopes on machine learning mass modeling, *Physical Review C* (2024).

M. Li, T. M. Sprouse, B. S. Meyer, M. R. Mumpower. Atomic masses with machine learning for the astrophysical r process, *Physics Letters B* (2024).

M. R. Mumpower, **M. Li**, T. M. Sprouse, B. S. Meyer, A. E. Lovell, A. Mohan. Bayesian averaging for ground state masses of atomic nuclei in a machine learning approach, *Frontiers in Physics* (2023).

M. Li, B. S. Meyer. Dependence of (n,γ)-(γ,n) equilibrium r-process abundances on nuclear physics, *Physical Review C* 106, 035803 (2022).

PRESENTATIONS

2025 Oct	**DNP, APS**, Chicago, IL (invited)
	"Machine Learning for the Properties of Exotic Nuclei"
2025 Oct	**DNP, APS**, Chicago, IL (invited)
	"Machine Learning Nuclear Masses for the Astrophysical r-process"
2025 Oct	**Triangle Nuclear Theory Colloquium**, North Carolina State University, Raleigh, NC (invited)
	"Bridging Nuclei and Stars: Constraining Nuclear Mass Models with the r-Process Observables"
2025 Sep	**Astrophysics Chat**, University of California, Berkeley, CA
	"Heavy Element Formation: From Nuclear Properties to Astrophysical Observables"
2025 July	**IReNA-UKAKUREN**, Osaka Metropolitan University, Osaka, Japan (Invited)
	"Constraining Nuclear Mass Models with the r-Process Observables with multi-objective functions."
2025 July	**GravNu**, California State University, Fullerton, CA
	"Constraining Nuclear Mass Models with the r-Process Observables with multi-objective functions."
2025 June	**Gordon Research Seminar**, Colby-Sawyer College, New London, NH (Invited)
	"Constraining Nuclear Mass Models with the r-Process Observables with multi-objective functions."

2025 June	**CeNAM**, Ohio University, Athens, OH
	"Constraining Nuclear Mass Models with the r-Process Observables with multi-objective functions."
2025 Apr	**Astrophysics Seminar**, University of Notre Dame, South Bend, IN
	"Bridging Nuclei and Stars: Constraining Nuclear Mass Models with the r-Process Observables."
2025 Mar	**APS Global Physics Summit**, Anaheim, CA
	"Graph-based recursive relations for computing and analyzing r-process abundances."
2024 Jul	**N3AS Summer School**, Santa Cruz, CA
	"Applying graph theory to r-process nucleosynthesis calculation."
2024 Jun	**CeNAM Frontier Meeting**, South Bend, IN
	"GrRproc: A Graph-based Method to Calculate r Process."
2024 Jun	**N3AS Annual Meeting**, Berkeley, CA (Invited)
	"GrRproc: A Graph-based Method to Calculate r Process."
2024 Jan	**Astrophysics Seminar**, IHEP, Beijing, China (Invited)
	"An Introduction to Astrophysical r-Process."
2023 Nov	**DNP, APS**, Honolulu, HI
	"Atomic Mass with Machine Learning for Astrophysical r Process."
2023 Nov	**N3AS Workshop, APS**, Honolulu, HI (Invited)
	"GrRproc: A Graphic Way of Calculating the Abundances of Heavy Nuclei."
2023 May	**CeNAM Frontier Meeting**, MSU, Lansing, MI
	"Machine Learning Nuclear Properties for the Rapid Neutron Capture Process."
2023 May	**Frontier Summer School**, MSU, Lansing, MI (Invited)
	"Atomic Mass with Machine Learning for the Study of r Process."
2022 Oct	**DNP, APS**, New Orleans, LA
	"Extrapolating Mixture Density Network Predictions: Application to the Astrophysical r-Process."
2022 Aug	**Center for Theoretical Astrophysics**, Los Alamos, NM (Invited)
	"Nuclear Mass with Machine Learning and Application to the Astrophysical r-Process."
2022 Jul	**Theoretical Division**, Los Alamos, NM
	"Nuclear Mass with Machine Learning and Application to the Astrophysical r-Process."
2022 Jul	**Center for Nonlinear Studies**, Los Alamos, NM
	"Machine Learning for Nuclear Masses with a Probabilistic Neural Network."
2021 Oct	**DNP, APS**, Boston, MA
	"Dependence of (n, γ)–(γ, n) Equilibrium r-Process Abundances on Nuclear Physics."

GRANTS

2023	LANL the Center for Space and Earth Science research fellowship
	CeNAM Travel Grant
2022	LANL Center for Nonlinear Studies Graduate Research Fellowship
	LANL T-2 Division Graduate Research Fellowship
2021	Graduate Travel Grant, Clemson University

AWARDS

2024	*LANL News Report:* AI for astrophysics: Algorithms help chart the origins of heavy elements
	Also reported in phys.org
2022	Outstanding Presentation, Student Symposium, Los Alamos National Lab, Aug. 2022
2018	National Encouragement Scholarship, Zhengzhou University (<5%)

REFERENCE

Prof. Bradley Meyer	**Prof. Rebecca Surman**	**Prof. Gail McLunghlin**	**Dr. Matthew Mumpower**
Ph.D. Advisor	Postdoc Advisor	Postdoc Advisor	Summer Intern Advisor
Clemson University	University of Notre Dame	NC State University	Los Alamos National Lab
mbradle@clemson.edu	rsurman@nd.edu	gcmclaug@ncsu.edu	matthew@mumpower.net