

Biographical Sketch: GRANT J. MATHEWS

October 2017

Department of Physics, University of Notre Dame, Notre Dame, IN 46556
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PRESENT POSITION: 1994-Present - Professor
2001-Present - Director: Center for Astrophysics (CANDU)
University of Notre Dame, Department of Physics, Notre Dame, IN 46556

PREVIOUS POSITIONS: 1981-1994 - Senior Scientist, Physical Sciences Directorate, Physics & Space Technology/V-Division, University of California, Lawrence Livermore National Laboratory, 1992-1994 - Adjunct Professor of Physics and Astronomy University of California, Davis

EDUCATION: B.S., Chemical Physics: 1972, Michigan State University
Ph.D., Nuclear Chemistry, 1977, University of Maryland, College Park

HONORS: Research Excellence Award of the Sigma Xi (1976), Assoc. West. Univ.-ERDA-Fellowship to Lawrence Berkeley Lab. (1976), Visiting Scientist: California Institute of Technology (1981), Guest Scientist: Max Planck Institute for Astrophysics (1984), Distinguished Visiting Professor: Univ. of Chicago (1990), Outstanding Scientific Publ. Award: Phys. Res. Prog., LLNL (1993), Visiting Professor: National Astron. Obs. Japan (1994, 2000; 2005, 2008, 2010-2012), Distinguished Lecturer, Tokyo University, Center for Excellence (2005, 2013) Vietnamese Exchange Foundation Faculty Scholar (2014) Center of Excellence Visiting Professor, National Astron. Obs. Japan, (2015-2016) Fellow: American Physical Society, Astrophysics Division (1995)

Current funding : Department of Energy, Nuclear Theory Grant Number: DE-FG02-95ER40934, "Nuclear Properties at Extreme Density, Temperature, Spin and Isospin"

Total Award Amount: \$650,000: Award Period: 06/15/16 – 06/14/18

Graduate Students Advised over the Past Five Years:

Current: Jared Coughlin (2018) , Nishanth Sasanka (2019), Atul Ikeda (2020)

Completed: Michelle Dolan, PhD 2013; Matt Meixner, PhD 2013; J Pokohontas Olson, PhD 2016; MacKenzie Warren, PhD 2016; Mayukh Gangopadhyay (2017)

Current Visiting Scholars/Postdocs: Nguyen Q. Lan (2006-2011, 2016-2017) Motohiko Kusakabe (2015-2017)

Publications: *over 265 Refereed journal publications with over 5,500 Citations, over 400 Invited talks and colloquia, 5 Books Co-authored or Edited in Astrophysics, Nuclear Physics, Relativity, and Cosmology*

Some Relevant Publications in 2013-2017

1. A. Snedden, L. A. Phillips, **G. J. Mathews**, J. Coughlin, I.-S. Suh, and A. Bhattacharya, "A New Multi-Scale Structure Finding Algorithm to Identify Cosmological Structure," J. Comp. Phys, 299, 92 (2015), arXiv:1409.7711

2. A. Snedden, J. Coughlin, L. A. Phillips, **G. J. Mathews**, and I.-S. Suh, "Star Formation and Gas Phase History of the Cosmic Web," *Mon. Not. Roy. Astron. Soc.* 455, 2804, (2016), arXiv:1412.7050
3. S. Shibagaki, T. Kajino, **G. J. Mathews**, S. Chiba, S. Nishimura, and G. Lorusso, "Relative contributions of the weak, main and fission-recycling r-process, *Astrophys. J.*, 816, 79 (2016). arXiv:1505.02257
4. **G. J. Mathews**, A. Snedden, L. A. Phillips, I.-S. Suh, J. Coughlin, A. Bhattacharya, X. Zhao, and N. Q. Lan, "Origin and evolution of structure and nucleosynthesis for galaxies in the local group," *Mod. Phys. Lett., A*29, 1430012 (2014).
5. **G. J. Mathews**, N. Q. Lan, and T. Kajino, "Constraints on Pre-inflation Fluctuations in a Nearly Flat Open Λ CDM Cosmology," *Phys. Rev. D*92, 123514 (2015), arXiv:1406.3409.
6. **G. J. Mathews**, J. Hidaka, T. Kajino, and J. Suzuki, "Supernova Relic Neutrinos and the Supernova Rate Problem: Analysis of Uncertainties and Detectability of ONeMg and Failed Supernovae," *Astrophys. J.* 790, 115 (2014) .
7. I.-S. Suh, **G. J. Mathews**, J. R. Haywood, and N. Q. Lan, "Analysis of Conformally Flat Approximation for Binary Neutron Star Initial Conditions", *Advances in Astronomy*, vol. 2017, id.612703, (2017) arXiv:1601.01460, DOI: 10.1155/2017/6127031
8. **G. J. Mathews**, S. Shibagaki, and T. Kajino, "Origin of r-Process Elements and Galactic Chemodynamical Evolution," in *Proc. Int. Symp. on Nuclei in the Cosmos 14*, Niigata Japan, 19-24 June, 2016, JPS Conf. Proc., 14, 010603 (2017)
9. **G. J. Mathews**, M. R. Gangopadhyay, P. Garnavich, B. Rose, K. Ichiki, T. Kajino, and D. Yamazaki, "Constraints on the birth of the universe and origin of cosmic dark flow," *J. Mod. Phys.* A30 1545022, (2015) arXiv:1508.01214.
10. J. Hidaka, T. Kajino and **G. J. Mathews**, "Red-Supergiant and Supernova Rate Problems: Implication for the Relic Supernova Neutrino Spectrum," *Astrophys. J.*, 827, 85 (2016).
11. **G. J. Mathews**, B. Rose, P. Garnavich, D. Yamazaki, and T. Kajino, "Detectability of cosmic dark flow in the type Ia supernova redshift-distance relation," *Astrophys. J.*, 827, 60 (2016), arXiv:1504.06913.
12. M. L. Warren, **G. J. Mathews**, M. Meixner, J. Hidaka, and T. Kajino, "Impact of sterile neutrino dark matter on core-collapse supernovae", *Int. J. Mod. Phys.*, A31, 1650137 (2016), arXiv:1603.05503.