Curriculum Vita

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EDUCATION

- 2008, *University of Oxford*, Doctor of Philosophy
- 2002, *University of Tennessee*, Master of Science
- 2000, *University of Oxford*, Master of Physics

TEACHING EXPERIENCE

- 2017-2023, *Associate Professor*, *East Texas A&M University*
- 2012-2027, *Assistant Professor*, *East Texas A&M University*
- 2009-2012, *Adjunct Assistant Professor*, *East Texas A&M University*

PUBLICATIONS

1. D. Neill, D. Tsang, C. Drischler, J. W. Holt, et al. “Resonant shattering flares as asteroseismic tests of chiral effective field theory”. 111.1, 015809 (2025), p. 015809. DOI:10.1103/PhysRevC.111.015809.

2. D. Neill, D. Tsang, and W. G. Newton. “Strengthening nuclear symmetry energy constraints using multiple resonant shattering flares of neutron stars with realistic mass uncertainties”. **MNRAS** 532.1 (2024), pp. 827–840. DOI:10.1093/mnras/stae1481.

3. A. Sorensen, K. Agarwal, K. W. Brown, Z. Chajęcki, et al. “Dense nuclear matter equation of state from heavy-ion collisions”. **Progress in Particle and Nuclear Physics** 134, 104080 (2024), p. 104080. DOI:10.1016/j.ppnp.2023.104080.

4. D. Neill, R. Preston, W. G. Newton, and D. Tsang. “Constraining the Nuclear Symmetry Energy with Multimessenger Resonant Shattering Flares”. 130.11, 112701 (2023), p. 112701. DOI:10.1103/PhysRevLett.130.112701.

5. D. Neill, D. Tsang, H. van Eerten, G. Ryan, et al. “Resonant shattering flares in black hole-neutron star and binary neutron star mergers”. **MNRAS** 514.4 (2022), pp. 5385–5402. DOI:10.1093/mnras/stac1645.

6. W. G. Newton, L. Balliet, S. Budimir, G. Crocombe, et al. “Ensembles of unified crust and core equations of state in a nuclear-multimessenger astrophysics environment”. **European Physical Journal A** 58.4, 69 (2022), p. 69. DOI:10.1140/epja/s10050-022-00710-0.

7. W. G. Newton, S. Cantu, S. Wang, A. Stinson, et al. “Glassy quantum nuclear pasta in neutron star crusts”. 105.2, 025806 (2022), p. 025806. DOI:10.1103/PhysRevC.105.025806.

8. W. G. Newton, R. Preston, L. Balliet, and M. Ross. “From neutron skins and neutron matter to the neutron star crust”. **Physics Letters B** 834, 137481 (2022), p. 137481. DOI:10.1016/j.physletb.2022.137481.

9. H. Schatz, A. D. Becerril Reyes, A. Best, E. F. Brown, et al. “Horizons: nuclear astrophysics in the 2020s and beyond”. **Journal of Physics G Nuclear Physics** 49.11, 110502 (2022), p. 110502. DOI:10.1088/1361-6471/ac8890.

10. L. E. Balliet, W. G. Newton, S. Cantu, and S. Budimir. “Prior Probability Distributions of Neutron Star Crust Models”. **ApJ** 918.2, 79 (2021), p. 79. DOI:10.3847/1538-4357/ac06a4.

11. D. Neill, W. G. Newton, and D. Tsang. “Resonant shattering flares as multimessenger probes of the nuclear symmetry energy”. **MNRAS** 504.1 (2021), pp. 1129–1143. DOI:10.1093/mnras/stab764.

12. W. G. Newton and G. Crocombe. “Nuclear symmetry energy from neutron skins and pure neutron matter in a Bayesian framework”. 103.6, 064323 (2021), p. 064323. DOI:10.1103/PhysRevC.103.064323.

13. T. S. Wood, V. Graber, and W. G. Newton. “Superconducting phases in a two-component microscale model of neutron star cores”, arXiv:2011.02873 (2020). DOI:10.48550/arXiv.2011.02873.

14. W. G. Newton, A. W. Steiner, and K. Yagi. “Testing the Formation Scenarios of Binary Neutron Star Systems with Measurements of the Neutron Star Moment of Inertia”. **ApJ** 856.1, 19 (2018), p. 19. DOI:10.3847/1538-4357/aaafd1.

15. T. Fischer, N.-U. Bastian, D. Blaschke, M. Cierniak, et al. “The State of Matter in Simulations of Core-Collapse supernovae—Reflections and Recent Developments”. **PASA** 34, e067 (2017), e067. DOI:10.1017/pasa.2017.63.

16. N.-B. Zhang, B.-J. Cai, B.-A. Li, W. G. Newton, et al. “How tightly is the nuclear symmetry energy constrained by a unitary Fermi gas?” **Nuclear Science and Techniques** 28.12, 181 (2017), p. 181. DOI:10.1007/s41365-017-0336-2.

17. X.-T. He, F. J. Fattoyev, B.-A. Li, and W. G. Newton. “Shedding Light on the EOS-Gravity Degeneracy and Constraining the Nuclear Symmetry Energy from the Gravitational Binding Energy of Neutron Stars”. *European Physical Journal Web of Conferences*. **109**. European Physical Journal Web of Conferences. EDP, 2016, 07002, p. 07002. DOI:10.1051/epjconf/201610907002.

18. C. J. Horowitz, D. K. Berry, M. E. Caplan, T. Fischer, et al. “Nuclear pasta and supernova neutrinos at late times”, arXiv:1611.10226 (2016). DOI:10.48550/arXiv.1611.10226.

19. B.-J. Cai, F. J. Fattoyev, B.-A. Li, and W. G. Newton. “Critical density and impact of Δ (1232) resonance formation in neutron stars”. 92.1, 015802 (2015), p. 015802. DOI:10.1103/PhysRevC.92.015802.

20. X.-T. He, F. J. Fattoyev, B.-A. Li, and W. G. Newton. “Impact of the equation-of-state-gravity degeneracy on constraining the nuclear symmetry energy from astrophysical observables”. 91.1, 015810 (2015), p. 015810. DOI:10.1103/PhysRevC.91.015810.

21. J. Hooker, W. G. Newton, and B.-A. Li. “Efficacy of crustal superfluid neutrons in pulsar glitch models”. **MNRAS** 449.4 (2015), pp. 3559–3567. DOI:10.1093/mnras/stv582.

22. X.-H. Li, W.-J. Guo, B.-A. Li, L.-W. Chen, et al. “Neutron-proton effective mass splitting in neutron-rich matter at normal density from analyzing nucleon-nucleus scattering data within an isospin dependent optical model”. **Physics Letters B** 743 (2015), pp. 408–414. DOI:10.1016/j.physletb.2015.03.005.

23. W. G. Newton, S. Berger, and B. Haskell. “Observational constraints on neutron star crust-core coupling during glitches”. **MNRAS** 454.4 (2015), pp. 4400–4410. DOI:10.1093/mnras/stv2285.

24. H. Pais, C. Providência, W. G. Newton, and J. R. Stone. "Core-collapse supernova matter: light clusters, pasta phase and phase transitions", arXiv:1503.08753 (2015). DOI:10.48550/arXiv.1503.08753.

25. A. W. Steiner, S. Gandolfi, F. J. Fattoyev, and W. G. Newton. "Using neutron star observations to determine crust thicknesses, moments of inertia, and tidal deformabilities". 91.1, 015804 (2015), p. 015804. DOI:10.1103/PhysRevC.91.015804.

26. F. J. Fattoyev, W. G. Newton, and B.-A. Li. "Probing the high-density behavior of symmetry energy with gravitational waves". **European Physical Journal A** 50.2, 45 (2014), p. 45. DOI:10.1140/epja/i2014-14045-6.

27. F. J. Fattoyev, W. G. Newton, and B.-A. Li. "Quantifying correlations between isovector observables and the density dependence of the nuclear symmetry energy away from saturation density". 90.2, 022801 (2014), p. 022801. DOI:10.1103/PhysRevC.90.022801.

28. W. G. Newton, J. Hooker, M. Gearheart, K. Murphy, et al. "Constraints on the symmetry energy from observational probes of the neutron star crust". **European Physical Journal A** 50.2, 41 (2014), p. 41. DOI:10.1140/epja/i2014-14041-x.

29. H. Pais, W. G. Newton, and J. R. Stone. "Phase transitions in core-collapse supernova matter at sub-saturation densities". 90.6, 065802 (2014), p. 065802. DOI:10.1103/PhysRevC.90.065802.

30. F. J. Fattoyev, J. Carvajal, W. G. Newton, and B.-A. Li. "Constraining the high-density behavior of the nuclear symmetry energy with the tidal polarizability of neutron stars". 87.1, 015806 (2013), p. 015806. DOI:10.1103/PhysRevC.87.015806.

31. F. J. Fattoyev, W. G. Newton, J. Xu, and B.-A. Li. "Pure Neutron Matter Constraints and Nuclear Symmetry Energy". *Journal of Physics Conference Series*. **420**. Journal of Physics Conference Series. IOP, 2013, 012108, p. 012108. DOI:10.1088/1742-6596/420/1/012108.

32. B.-A. Li, L.-W. Chen, F. J. Fattoyev, W. G. Newton, et al. "Probing Nuclear Symmetry Energy and its Imprints on Properties of Nuclei, Nuclear Reactions, Neutron Stars and Gravitational Waves". *Journal of Physics Conference Series*. **413**. Journal of Physics Conference Series. IOP, 2013, 012021, p. 012021. DOI:10.1088/1742-6596/413/1/012021.

33. W. G. Newton, M. Gearheart, and B.-A. Li. "A Survey of the Parameter Space of the Compressible Liquid Drop Model as Applied to the Neutron Star Inner Crust". **ApJS** 204.1, 9 (2013), p. 9. DOI:10.1088/0067-0049/204/1/9.

34. W. G. Newton, M. Gearheart, D.-H. Wen, and B.-A. Li. “Constraints on the symmetry energy from neutron star observations”. *Journal of Physics Conference Series*. **420**. Journal of Physics Conference Series. IOP, 2013, 012145, p. 012145. DOI:10.1088/1742-6596/420/1/012145.

35. W. G. Newton, K. Murphy, J. Hooker, and B.-A. Li. “The Cooling of the Cassiopeia A Neutron Star as a Probe of the Nuclear Symmetry Energy and Nuclear Pasta”. **ApJL** 779.1, L4 (2013), p. L4. DOI:10.1088/2041-8205/779/1/L4.

36. F. J. Fattoyev, W. G. Newton, J. Xu, and B.-A. Li. “Generic constraints on the relativistic mean-field and Skyrme-Hartree-Fock models from the pure neutron matter equation of state”. 86.2, 025804 (2012), p. 025804. DOI:10.1103/PhysRevC.86.025804.

37. D.-H. Wen, W. G. Newton, and B.-A. Li. “Sensitivity of the neutron star r-mode instability window to the density dependence of the nuclear symmetry energy”. 85.2, 025801 (2012), p. 025801. DOI:10.1103/PhysRevC.85.025801.

38. M. Gearheart, W. G. Newton, J. Hooker, and B.-A. Li. “Upper limits on the observational effects of nuclear pasta in neutron stars”. **MNRAS** 418.4 (2011), pp. 2343–2349. DOI:10.1111/j.1365-2966.2011.19628.x.

39. B.-A. Li, L.-W. Chen, M. Gearheart, J. Hooker, et al. “Imprints of Nuclear Symmetry Energy on Properties of Neutron Stars”. *Journal of Physics Conference Series*. **312**. Journal of Physics Conference Series. IOP, 2011, 042006, p. 042006. DOI:10.1088/1742-6596/312/4/042006.

40. W. G. Newton, M. Gearheart, J. Hooker, and B.-A. Li. “The nuclear symmetry energy, the inner crust, and global neutron star modeling”, arXiv:1112.2018 (2011). DOI:10.48550/arXiv.1112.2018.

41. W. G. Newton. “Modeling Nuclear Pasta and the Transition to Uniform Nuclear Matter with the 3D-Skyrme-Hartree-Fock Method”. *Bulk Nuclear Properties: 5th Anl/msu/jina/int Frib Workshop*. Ed. by P. Danielewicz. **1128**. American Institute of Physics Conference Series. AIP, 2009, pp. 154–164. DOI:10.1063/1.3146210.

42. W. G. Newton and B.-A. Li. “Constraining the gravitational binding energy of PSR J0737-3039B using terrestrial nuclear data”. 80.6, 065809 (2009), p. 065809. DOI:10.1103/PhysRevC.80.065809.

43. W. G. Newton and J. R. Stone. “Modeling nuclear “pasta” and the transition to uniform nuclear matter with the 3D Skyrme-Hartree-Fock method at finite temperature: Core-collapse supernovae”. 79.5, 055801 (2009), p. 055801. DOI:10.1103/PhysRevC.79.055801.

44. W. Newton. “A new study of the transition to uniform nuclear matter in neutron stars and supernovae”. **Physics of Particles and Nuclei** 39.7 (2008), pp. 1173–1175. DOI:10.1134/S1063779608070356.

45. W. G. Newton, J. R. Stone, and A. Mezzacappa. “From microscales to macroscales in 3D: selfconsistent equation of state for supernova and neutron star models”. *Journal of Physics Conference Series*. Ed. by V. Reis Dr. **46**. Journal of Physics Conference Series. IOP, 2006, pp. 408–412. DOI:10.1088/1742-6596/46/1/056.

46. W. G. Newton. “Subnuclear matter in neutron stars and supernovae: nuclear pasta and beyond”. *RAGtime 6/7: Workshops on black holes and neutron stars*. Ed. by S. Hledík and Z. Stuchlík. 2005, pp. 119–135.

47. P. Podsiadlowski, J. D. M. Dewi, P. Lesaffre, J. C. Miller, et al. “The double pulsar J0737-3039: testing the neutron star equation of state”. **MNRAS** 361.4 (2005), pp. 1243–1249. DOI:10.1111/j.1365-2966.2005.09253.x.

48. P. D. Stevenson, M. R. Strayer, J. Rikovska Stone, and W. G. Newton. “Giant Resonances from Tdhf”. **International Journal of Modern Physics E** 13.1 (2004), pp. 181–185. DOI:10.1142/S0218301304001928.

RESEARCH GRANTS AND AWARDS

- 2022-2024, RUI: Neutron star crusts in multi-messenger astronomy: probability distributions of ground state and accreted crusts with rigorously quantified modeling error. (PI W.G. Newton), *NSF Division of Physics: Investigator-Initiated Research Projects (PHY)*, $179,849
- 2021-2025, Collaborative Research: Investigating STEM Teacher Preparation and Rural Teacher Persistence and Retention (TPR)2 (local-PI W.G. Newton, co-PI Melanie Fields), *NSF Noyce Teacher Scholarship Program, Track 4*, $70,000
- 2019-2022, Physics Teacher Preparation at Texas A&M University-Commerce (PI Robynne Lock, co-PI W.G. Newton), *PhysTEC Comprehensive Sites (NSF/APS)*, $288,397
- 2018-2023, The Noyce Teacher Scholarship Program at Texas A&M-Commerce (PI W.G. Newton, co-PIs Robynne Lock, Joanna Delgado-Avecedo, Rebecca Dibbs, Stephen Starnes, Melanie Fields, Katherine Price-Blount), *NSF Noyce Teacher Scholarship Program, Track 1*, $1,199,473
- 2018-2022, Lattice Boltzmann Simulations of soft nuclear astro-materials in neutron star crusts (PI: W.G. Newton), *NASA ATP*, $357,056
- 2016-2017, A Community-Based Approach to Building the Capacity of Physics Teacher Preparation at Texas A&M University-Commerce (PI: W.G. Newton, co-PIs Robynne Lock and Gilbert Naizer), *NSF Noyce Teacher Scholarship Program Capacity Building Track*, $35,000

- 2014-2017, The impact of short-range correlations in nuclear matter on the equation of state, composition and dynamics of neutron stars (PI W.G. Newton), *Cottrell College Science Award 22741*, $74,948
- 2011-2014, Extracting the Symmetry Energy of Dense Neutron-Rich Nuclear Matter from Astrophysical Observations", NASA Astrophysics Theory Program, Grant number 10-ATP10-0095 (PI: Bao-An Li; Science-PI W.G. Newton), *<Funding Agency>*, $399,870