

CHARLES J. HOROWITZ

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CURRICULUM VITAE

Education:

<i>Degree</i>	<i>Institution</i>
B.S.	Harvey Mudd College
Ph.D.	Stanford University Thesis: <i>Structure of Nuclei in a Rel. Meson-Baryon Quantum Field Theory</i> , J. D. Walecka, Advisor

Academic Positions:

Full Professor	Indiana University	1991–
Visiting Professor	NSCL and Michigan State University	2012
Visiting Professor	Oak Ridge Nat. Lab. and U. Tenn.	2011
Visiting Scientist	MPI for Astrophysics, Garching Germany	2003
Visiting Professor	Ins. for Theoretische Kernphysik, Univ. of Bonn	1996
Associate Prof.	Indiana University (Tenure granted 1989)	1987–91
Assistant Prof.	M. I. T.	1984–86
Postdoc. Fellow	Niels Bohr Institute, Copenhagen and M. I. T.	1982-83

Service:

National Science Engineering Research Council of Canada (NSERC) sub-atomic physics evaluation group	2018-
Facility for Rare Isotope Beams (FRIB) Theory Alliance executive board	2016-
Training in Advanced Low Energy Nuclear Theory (TALENT) board	2015-
Director of Interdepartmental Program in Astrophysics, Indiana U.	2015-
Center for Exploration of Energy and Matter (CEEM) Executive Committee, Indiana University	2010-
Director of Graduate Studies, Physics Dept., Indiana University	2015-2018
Institute for Nuclear Theory (INT) National Advisory Committee	2014-2016
APS Division of Nuclear Physics Thesis Prize Committee	2002-3, 2013
National Nuclear Physics Summer School Steering Comm. (Chair 2009)	2007-9
APS Division of Nuclear Physics Program Committee	2009-10
Subatomic Experiment Evaluation Committee, TRIUMF, Vancouver, Canada	2007-10

Selected Conferences Organized:

Neutron star mergers for non-experts: gravitational waves and multi-messenger astronomy in the FRIB era, East Lansing, MI	2018
Astro-Solids, Dense Matter and Gravitational Waves, INT, Seattle, WA	2018
The r-process nucleosynthesis: connecting FRIB with the cosmos, East Lansing, MI	2016
Flavor Observations with Supernova Neutrinos, INT, Seattle, WA	2016
The Phases of Dense Matter, INT, Seattle, WA	2016
Neutron Skins of Nuclei, MITP, Mainz, Germany	2015,16
TALENT 2015: Nuc. Phys. of neutron stars and SN, INT, Seattle, WA	2015
Simulating the Supernova neutrinosphere with heavy ion collisions, ECT*, Trento, Italy	2014
Symmetry-energy in the context of new radioactive beam facilities and astrophysics, East Lansing, MI	2013
The Calcium Radius Experiment at JLab, Newport News, VA	2013
The Lead Radius Exp. and neutron rich matter in astrophys. and in the lab., ECT*, Trento, Italy	2009
PREX and Neutron Rich Matter in the Heavens and on Earth, Newport News, VA	2008
Three nucleon interactions from few to many-body systems, TRIUMF, Vancouver, Canada	2007
In Heaven and on Earth 2006: The Nuclear EOS in Astrophysics, Montreal, Canada	2006
Charge Symmetry Breaking, ECT*, Trento, Italy	2005
Parity V. in Atomic, Nuclear and Hadronic Systems, ECT*, Trento, Italy	2000

Professional Society Membership:

American Physical Society (Fellow 2008, Outstanding Referee 2010)
Divisions of Nuclear Physics, Astrophysics, and Gravitational Physics.

Post Doctoral Fellows Sponsored (present position):

S. Ban, C. Benesh (Asoc. Prof., Wesleyan College), A. I. Chugunov (Senior Scientist, Ioffe Inst., St. Petersburg), F. Fattoyev (Assistant Prof., Manhattan College), A. Gardestig (Faculty, Kentucky State), S. G. Gardner (Prof., U Kentucky), M. Gorshtein (Mainz), D. K. Griegel, M. A. Perez-Garcia (Prof., U. Salamanca, Spain), J. Piekarewicz (Prof., FSU), S. Postnikov, I. Sagert (Los Alamos), S. W. Schramm (Prof., U. Frankfurt), A. Schwenk (Prof., TU Darmstadt), K. Wehrberger (Head, Research Centers, DFG, Germany)

PhD Students Supervised (year graduated):

D. Murdock (1987), H. Kim (1995), W. Melendez (1996), G. Li (2000), J. Carriere (2005), L. Caballero (2008), H. Dussan (2009), G. Shen (2010), J. Hughto (2012), J. Mason (Masters 2012), A. Schneider (2013), M. Caplan (2017), Z. Lin (2018), Z. Vacanti, J. Yin.

Dissertation award in Nuclear Physics of the American Physical Society:

- Matt Caplan (2018) “for a pioneering study of dense nuclear matter in compact stars that makes surprising connections across disciplines including nuclear physics and biophysics”.
- Gang Shen (2013) “for development of a new self-consistent equation of state of hot and dense matter intended for use in numerical simulations of core-collapse supernova, neutron star mergers and related extreme astrophysical phenomena”.

Recent Undergraduate and High School Students Supervised:

Terance Schuh (2018), Ellie Vandergriff (2017), Maria Lysandra (High School, 2016), S. Coleman (High School 2015-6), C. Amason (2015), C. Briggs(2012-2014), B. Catazano(2014), E. Clark (2014), T. Dombrowski (2013), Jake Fish (2012), Max Irwin (High School 2012), G. Proffitt (2009).

Publications:

200+ with an h index of 50 (according to INSPIRE). See page 5.

Selected popular articles that discuss my work:

1. Nuclear pasta in neutron stars may be the strongest material in the universe, Emily Conover, Science News 9/14/18 at <https://www.sciencenews.org/article/nuclear-pasta-neutron-stars-may-be-strongest-material-universe>
2. Neutron stars shed neutrinos to cool down quickly, Emily Conover, ScienceNews, 193, 11 (2018). <https://www.sciencenews.org/article/neutron-stars-shed-neutrinos-cool-down-quickly>
3. Viewpoint: A Rapidly Cooling Neutron Star, James M. Lattimer, Physics 11, 42 (2018). <https://physics.aps.org/articles/v11/42>
4. From Tiny Neutron Skins, the Secrets of Neutron Stars, Inside science, May 4, 2018, <https://www.insidescience.org/news/tiny-neutron-skins-secrets-neutron-stars>
5. Synopsis: Gravitational Waves Shed Light on Dense Nuclear Matter, Physics, April 25, 2018, <https://physics.aps.org/synopsis-for/10.1103/PhysRevLett.120.172702>
6. Synopsis: Neutron Stars in a Petri Dish, Jessica Thomas, Physics, November 1, 2016, at <http://physics.aps.org/synopsis-for/10.1103/PhysRevC.94.055801>
7. Neutron stars’ hidden nuclear pasta, Nanda Rea, Physics Today **68**, 62 (2015).

8. Neutron Stars Serve Up Plates of Nuclear Pasta, Scientific American Blogs, Cocktail Party Physics, By Jennifer Ouellette— April 14, 2015. at <http://blogs.scientificamerican.com/cocktail-party-physics/2015/04/14/neutron-stars-serve-up-plates-of-nuclear-pasta/>
9. Nuclear pasta may offer insight into strange world of neutron stars, Lisa Zyga Phys.org article at <http://phys.org/news/2015-02-nuclear-pasta-insight-strange-world.html>
10. Nuclear pasta and Neutron waffles, APS News Vol 24 number 5, at <http://www.aps.org/publications/apsnews/201505/pasta.cfm>
11. Cosmic 'Nuclear Pasta' May Be Stranger Than Originally Thought, Charles Q. Choi, Space.com, January 21, 2015 at <http://www.space.com/28317-nuclear-pasta-neutron-star.html>
12. Material witness: Stellar metallurgy by Philip Ball, Nature Materials **13**, 431 (2014)
13. Inside exotic dead star is a pile of waffles by Hal Hodgson, New Scientist, **224** (2014)11 at <http://www.newscientist.com/article/dn26342-inside-exotic-dead-stars-are-piles-of-waffles.html>
14. Nuclear pasta by David Reagan (Advanced Visualization Lab IU), A. S. Schneider, J. Hugho, C. J. Horowitz, D. Berry, short video accepted for the visualization showcase at Supercomputing 2013 conference, Denver, CO, Nov. 17-22, 2013. Video at <https://iu.app.box.com/s/ylzbtjqpbs0jnixft5vq>
15. Star crust is 10 billion times stronger than steel by Rachel Courtland in Newscientist at <http://www.newscientist.com/article/dn16948-star-crust-is-10-billion-tim>
16. Star Crust is Ten Billion Times Stronger Than Steel by Ker Than, National Geographic News “Superman has nothing on the collapsed cores of massive snuffed-out stars, which constitute the strongest known material in the universe, a new study says”. <http://news.nationalgeographic.com/news/2009/05/090513-strong-star-crust.html>
17. Mountains on neutron stars could boost gravitational wave detection by Edwin Cartlidge, PhysicsWorld <http://physicsworld.com/cws/article/news/39179>
18. Chemistry of neutron stars modeled for first time by David Shiga, NewScientist, 2007, <https://www.newscientist.com/article/dn11903-chemistry-of-neutron-stars-modelled-for-first-time/>
19. The star with a soft centre by Adrian Cho, NewScientist 2294, 09 June 2001 <https://www.newscientist.com/article/mg17022941-500-the-star-with-a-soft-centre/>

Publications and Invited Talks

For a list of publications see page 5, while invited talks are listed starting on page 21.

Publications

1. “Weak radius of the proton”, C. J. Horowitz, arXiv:1809.06478, Phys. Lett. B, in press 2018.
2. “FRIB and the GW170817 Kilonova”, A. Aprahamian et al, arXiv:1809.00703, Proceedings for the FRIB Theory Alliance workshop ”FRIB and the GW170817 kilonova”, held 16-27 July 2018 at the Facility for Rare Isotope Beams, Michigan State University, East Lansing, MI, USA.
3. “The Elasticity of Nuclear Pasta”, M. E. Caplan, A. S. Schneider, C. J. Horowitz, arXiv:1807.02557, Phys. Rev. Lett. **121**, 132701 (2018).
4. “Domains and defects in nuclear pasta”, Andre da Silva Schneider, Matt E. Caplan, Don K. Berry, Charles J. Horowitz, arXiv:1807.0010, Phys. Rev. C **98**, 055801 (2018).
5. “r-process nucleosynthesis: Connecting rare-isotope beam facilities with the cosmos”, C. J. Horowitz et al., ArXiv:1805.04637, topical review article, J. Phys G, in press 2018.
6. “Polycrystalline crusts in accreting neutron stars”, M. E. Caplan, Andrew Cumming, D. K. Berry, C. J. Horowitz, R. Mckinven, arXiv:1709.09260, ApJ. **860**, 148 (2018).
7. “Neutron skins and neutron stars in the multi-messenger era”, F. J. Fattoyev, J. Piekarewicz, and C. J. Horowitz, ArXiv:1711.06615, Phys. Rev. Lett. **120**, 172702 (2018) Featured in Physics, Editors’ suggestion.
8. “Deep Crustal Heating by Neutrinos from the Surface of Accreting Neutron Stars”, F. J. Fattoyev, Edward F. Brown, Andrew Cumming, C. J. Horowitz, Bao-An Li, and Zidu Lin, arXiv:1710.10367, Phys. Rev. C **98**, 025801 (2018).
9. “Rapid neutrino cooling in the neutron star MXB 1659-29”, Edward F. Brown, Andrew Cumming, Farrukh J. Fattoyev, C. J. Horowitz, Dany Page, and Sanjay Reddy, ArXiv:1801.00041, Phys. Rev. Lett. **120**, 182701 (2018) Featured in Physics and Editors’ suggestion.
10. “Probing the fusion of neutron-rich nuclei with re-accelerated radioactive beams”, J. Vadas, Varinderjit Singh, B. B. Wiggins, J. Huston, S. Hudan, R. T. deSouza, Z. Lin, C. J. Horowitz, A. Chbihi, D. Ackermann, M. Famiano, and K. Brown, arXiv:1709.06167, Phys. Rev. C **97**, 031601(R) (2018) Editors’ suggestion.
11. “Muon Creation in Supernova Matter Facilitates Neutrino-driven Explosions”, R. Bollig, H.-Th. Janka, A. Lohs, G. Martinez-Pinedo, C.J. Horowitz, T. Melson, arXiv:1706.04630, Phys. Rev. Lett. **119**, 242702 (2017) Editors’ suggestion.

12. “Neutrino scattering in supernovae and the universal spin correlations of a unitary gas”, Zidu Lin, C. J. Horowitz, arXiv:1708.01788, Phys. Rev. C **96**, 055804 (2017).
13. “White paper on nuclear astrophysics and low-energy nuclear physics Part 2: Low-energy nuclear physics”, Mark A. Riley, Charlotte Elster, Joe Carlson, Michael P. Carpenter, Richard Casten, Paul Fallon, Alexandra Gade, Carl Gross, Gaute Hagen, Anna C. Hayes, Douglas W. Higinbotham, Calvin R. Howell, Charles J. Horowitz, Kate L. Jones, Filip G. Kondev, Suzanne Lapi, Augusto Macchiavelli, Elizabeth A. McCutchen, Joe Natowitz, Witold Nazarewicz, Thomas Papenbrock, Sanjay Reddy, Martin J. Savage, Guy Savard, Bradley M. Sherrill, Lee G. Sobotka, Mark A. Stoyer, M. Betty Tsang, Kai Vetter, Ingo Wiedenhoever, Alan H. Wuosmaa, Sherry Yennello, Progress in Particle and Nuclear Physics, **94**, 68 (2017).
14. “Core-Collapse Supernova Simulations including Neutrino Interactions from the Virial EOS”, Evan O’Connor, C. J. Horowitz, Zidu Lin, and Sean Couch, SN 1987A, 30 years later, International Astronomical Union Proceedings Series, IAU Symposium No. 331, (2017).
15. “Quantum Nuclear Pasta and Nuclear Symmetry Energy”, F. J. Fattoyev, C. J. Horowitz, and B. Schuetrumpf, arXiv:1703.01433, Phys. Rev. C **95**, 055804 (2017).
16. “Neutrino-nucleon scattering in supernova matter from the virial expansion”, C.J. Horowitz, O. L. Caballero, Zidu Lin, Evan O’Connor, and A. Schwenk, Phys. Rev. C **95**, 025801 (2017).
17. “Astromaterial science and nuclear pasta”, by M. E. Caplan and C. J. Horowitz, arXiv:1606.03646, Rev. Mod. Phys. **89**, 041002 (2017).
18. “A lower limit on the heat capacity of the neutron star core”, Andrew Cumming, Edward F. Brown, Farrukh J. Fattoyev, C. J. Horowitz, Dany Page, and Sanjay Reddy, Phys. Rev. C **95**, 025806 (2017). Editors’ suggestion.
19. “Parking garage structures in nuclear astrophysics and cellular biophysics”, D. K. Berry, M. Caplan, C. J. Horowitz, Greg Huber, A. S. Schneider, arXiv:1509.00410, Phys. Rev. C **94**, 055801 (2016). Editors’ suggestion.
20. “Fusion enhancement at near and sub-barrier energies in $^{19}\text{O}+^{12}\text{C}$ ”, Varinderjit Singh, J. Vadas, T. K. Steinbach, B. B. Wiggins, S. Hudan, and R. T. deSouza, Zidu Lin and C. J. Horowitz, L. T. Baby, S. A. Kuvin, V. Tripathi, and I. Wiedenhover, Phys. Lett. B **765**, 99 (2016).
21. “Effect of topological defects on nuclear pasta observables”, A. S. Schneider, D. K. Berry, M. E. Caplan, C. J. Horowitz, Z. Lin, Phys. Rev. C **93**, 065806 (2016).

22. “Quantum Simulations of Nuclei and Nuclear Pasta with the Multi-resolution Adaptive Numerical Environment for Scientific Simulations”, I. Sagert, G. I. Fann, F. J. Fattoyev, S. Postnikov, and C. J. Horowitz, arXiv 1509.06671, Phys. Rev. C **93**, 055801 (2016).
23. “The full weak charge density distribution of ^{48}Ca from parity violating electron scattering”, Z. Lin and C. J. Horowitz, Phys. Rev. C **92**, 014313 (2015). Editor’s suggestion.
24. “Swelling of nuclei embedded in neutron-gas and consequences for fusion”, A.S. Umar, V.E. Oberacker, C. J. Horowitz, P.-G. Reinhard, and J.A. Maruhn, Phys. Rev. C **92**, 025808 (2015).
25. “Disordered nuclear pasta, magnetic field decay, and crust cooling in neutron stars”, C. J. Horowitz, D. K. Berry, C. M. Briggs, M. E. Caplan, A. S. Schneider, atXiv:1410.2197, Phys. Rev. Lett. **114**, 031102 (2015).
26. “Pasta Nucleosynthesis: Molecular dynamics simulations of nuclear statistical equilibrium”, M. E. Caplan, A. S. Schneider, C. J. Horowitz, and D. K. Berry, arXiv 1412.8502, Phys. Rev. C **91**, 065802 (2015).
27. “Nuclear Waffles”, A. S. Schneider, D. K. Berry, C. M. Briggs, M. E. Caplan, and C. J. Horowitz, arXiv:1409.2551, Phys. Rev. C **90**, (2014) 055805.
28. “Pulsar Glitches: The Crust may be Enough”, J. Piekarewicz, F.J. Fattoyev, C.J. Horowitz, arXiv:1404.2660, Phys. Rev. C **90**, 015803 (2014).
29. “Parity violating elastic electron scattering from ^{27}Al and the QWEAK measurement”, C. J. Horowitz, ArXiv 1401.6898, Phys. Rev. C **89**, 045503 (2014).
30. “Weak polarized electron scattering”, J. Erler, C. J. Horowitz, S. Mantry, and P. A. Souder, Annu. Rev. Nucl. Part. Sci. **64** (2014) 269.
31. “A way forward in the study of the symmetry energy: experiment, theory, and observation”, C. J. Horowitz, E. F. Brown, Y. Kim, W. G. Lynch, R. Michaels, A. Ono, J. Piekarewicz, M. B. Tsang, and H. H. Wolter, J. Phys. G: Nucl. Part. Phys. **41** (2014) 093001.
32. “Coupled-cluster calculations of nucleonic matter”, G. Hagen, T. Papenbrock, A. Ekstrom, K. A. Wendt, G. Baardsen, S. Gandolfi, M. Hjorth-Jensen, C. J. Horowitz, ArXiv:1311.2925, Phys Rev C **89**, 014319 (2014).
33. “Electroweak Measurements of Neutron Densities in CREX and PREX at JLab, USA”, C. J. Horowitz, Krishna Kumar and Robert Michaels, Special volume on Nuclear Symmetry Energy for European Physics Journal A, Eds. Bao-An Li, Giuseppe Verde and Isaac Vidana, ArXiv:1307.3572, in press (2013).
34. “Nuclear Pasta Formation”, A. S. Schneider, C. J. Horowitz, J. Hugtto, and D. K. Berry, arXiv:1307.1678, Phys. Rev. C **88**, 065807 (2013). Featured in December 2013 Kaleidoscope of Phys. Rev. C
<http://journals.aps.org/prc/kaleidoscope/prc/88/6/065807>

35. “Neutron rich nuclei and neutron stars”, C. J. Horowitz, proceedings of fifth International Conference on “Fission and Properties of Neutron Rich Nuclei”, Sanibel, FL, arXiv:1303.0059, Editors J. H. Hamilton and A. V. Ramayya, World Scientific, Singapore (2014).
36. “Review of Multi-messenger observations of neutron rich matter”, C. J. Horowitz, Conference proceedings plenary talk, Xth Quark Confinement and the Hadron Spectrum, Munich, PoS(Confinement X)017, (2013).
37. “Energy functional for nuclei and neutron stars”, J. Erler, C.J. Horowitz, W. Nazarewicz, M. Rafalski, and P. -G. Reinhard, ArXiv:1211.6292, Phys. Rev. C **87**, 044320 (2013).
38. ”Direct MD simulation of liquid-solid phase equilibria for three-component plasma”, J. Hughto, C. J. Horowitz, A. S. Schneider, Zach Medin, Andrew Cumming, Phys. Rev. E **86**, 066413 (2012).
39. “Charged current neutrino interactions in supernovae in a virial expansion”, C. J. Horowitz, G. Shen, Evan O’Connor, and Christian Ott., arXiv:1209.3173, Phys. Rev. C **86**, 065806 (2012).
40. “Impact of spin-orbit currents on the electroweak skin of neutron rich nuclei”, C. J. Horowitz and J. Piekarewicz, Phys. Rev. C **86**, 045503 (2012).
41. “Microscopic sub-barrier fusion calculations for the neutron star crust”, A. S. Umar, V. E. Oberacker, C. J. Horowitz, Phys. Rev. C **85**, 055801 (2012).
42. “New Measurements of the Transverse Beam Asymmetry for Elastic Electron Scattering from Selected Nuclei”, S. Abrahamyan et al. (HAPPEX and PREX collaborations), Phys. Rev. Lett. **109**, 192501 (2012).
43. “Constraints on the symmetry energy and neutron skins from experiments and theory”, M. B. Tsang et al, arXiv:1204.0466, Phys. Rev. C **86**, 015803 (2012).
44. “Weak charge form factor and radius of ^{208}Pb through parity violation in electron scattering”, C. J. Horowitz, Z. Ahmed, C.-M. Jen, A. Rakhman, P. A. Souder, M. M. Dalton, N. Liyanage, K. D. Paschke, K. Saenboonruang, R. Silwal, G. B. Franklin, M. Friend, B. Quinn, K. S. Kumar, D. McNulty, L. Mercado, S. Riordan, J. Wexler, R. W. Michaels, G. M. Urciuoli, Phys. Rev. C **85** , 032501(R) (2012).
45. “The carbon-oxygen phase diagram of plasma mixtures in white dwarf stars”, A. S. Schneider, C. J. Horowitz, J Hughto and DK Berry, J. Phys. Conf. Ser. **402**, 012026 (2012).
46. “Measurement of the Neutron Radius of ^{208}Pb Through Parity-Violation in Electron Scattering”, S. Abrahamyan et al., Phys. Rev. Lett. **108**, 112502 (2012).

47. “Neutron Star Crust and Molecular Dynamics Simulation”, C. J. Horowitz, J. Hughto, A. Schneider, D. K. Berry, to appear as a chapter in the book ”Neutron Star Crust”, edited by C. A. Bertulani and J. Piekarewicz, available as arXiv:1109.5095.
48. “Direct MD simulation of liquid-solid phase equilibria for two-component plasmas”, A. S. Schneider, J. Hughto, C. J. Horowitz, D. K. Berry, *Phys. Rev. E* **85**, 066405 (2012).
49. “Parity Violating Electron Scattering Measurements of Neutron Densities”, Shufang Ban, CJH, R. Michaels, *J. Phys. G: Nucl. Part. Phys.* **39** (2012) 015104.
50. “Radiative corrections to the PREX and QWEAK experiments”, C. J. Horowitz, arXiv:1111.3681, *Nuovo Cim. C035N04*, 37 (2012).
51. “Durability of neutron star crust”, Andrey Chugunov and C. J. Horowitz, *Contributions to Plasma Physics* **52**, 122 (2012).
52. “Multi-messenger observations of neutron rich matter”, C. J. Horowitz, *Int J. Mod. Phys. E* **20**, 2077 (2011).
53. “Diffusion in Coulomb Crystals”, J. Hughto, A. S. Schneider, C. J. Horowitz, D. K. Berry, *Phys Rev E* **84**, 016401 (2011).
54. “A Second Relativistic Mean Field and Virial Equation of State for Astrophysical Simulations”, G. Shen, C. J. Horowitz, and E. O’Connor, *Phys. Rev. C* **83**, 065808 (2011).
55. “Model-dependence of the γZ dispersion correction to the parity-violating asymmetry in elastic ep scattering”, Mikhail Gorchtein, C. J. Horowitz, Michael J. Ramsey-Musolf, *Phys. Rev. C* **84**, 015502 (2011).
56. “Neutron rich matter, neutron stars and their crusts”, C. J. Horowitz, *J. Phys.: Conf. Ser.* **312**, 042003 (2011).
57. “A New Equation of State for Astrophysical Simulations”, G. Shen, C. J. Horowitz, S. Teige, *Phys. Rev. C* **83**, 035802 (2011).
58. “Diffusion of neon in white dwarf stars”, C. J. Horowitz, J. Hughto, A. Schneider, D. K. Berry, *Phys. Rev. E* **82**, 066401 (2010).
59. “Relativistic effective interaction for nuclei, giant resonances, and neutron stars”, F. Fattoyev, C. J. Horowitz, J. Piekarewicz, G. Shen, *Phys. Rev. C* **82**, 055803 (2010).
60. “Breaking stress of neutron star crust”, A.I. Chugunov, C.J. Horowitz, arXiv:1006.2279, *Mon. Not. R. Astron. Soc.* **407**, L54 (2010).
61. “Equation of state of nuclear matter in a virial expansion of nucleons and nuclei”, G. Shen, C. J. Horowitz, S. Teige, *Phys. Rev. C* **82**, 045802 (2010).

62. “Crystallization of carbon oxygen mixtures in white dwarf stars”, C. J. Horowitz, A. S. Schneider, D. K. Berry, *Phys. Rev. Lett.*, **104**, 231101 (2010).
63. “Equation of state of dense matter from a density dependent relativistic mean field model”, G. Shen, C. J. Horowitz, S. Teige, *Phys. Rev. C* **82**, 015806 (2010).
64. “Gravitational waves from low mass neutron stars”, C. J. Horowitz, *Phys. Rev. D* **81**, 103001 (2010).
65. “Neutron rich matter, neutron stars and their crusts”, C. J. Horowitz, arXiv:1008.0402, plenary talk of International Nuclear Physics Conference 2010, to be published in *Journal of Physics: Conference Series (JPCS)*, 2010.
66. “Dispersion corrections to parity violating electron scattering”, M. Gorchtein, C. J. Horowitz, M. J. Ramsey-Musolf, arXiv:1003.4300, proceedings of the VIII Latin American Symposium on Nuclear Physics and Applications, *AIP Conf. Proc.* **1265**, 328 (2010).
67. “Thermal conductivity and phase separation in the crust of accreting neutron stars”, C. J. Horowitz, O. L. Caballero, and D. K. Berry, *Phys. Rev.* **E 79**, 026103, (2009).
68. “Dispersion gamma-Z correction to the weak charge of the proton”, M. Gorchtein and C. J. Horowitz, *Phys.Rev.Lett.* **102**, 091806 (2009).
69. “The structure of accreted neutron star crust”, C. J. Horowitz, D. K. Berry, *Phys. Rev.* **C79**, 065803 (2009).
70. “The Breaking Strain of Neutron Star Crust and Gravitational Waves”, C. J. Horowitz, Kai Kadau, *Phys. Rev. Lett.* **102**, 191102 (2009).
71. “Fusion of neutron rich oxygen isotopes in the crust of accreting neutron stars”, C. J. Horowitz, H. Dussan, and D. K. Berry, *Phys. Rev.* **C77**, 045807 (2008).
72. “Shear viscosity of the outer crust of neutron stars: Ion contribution”, O. L. Caballero, S. Postnikov, C. J. Horowitz, and M. Prakash, *Phys. Rev.* **C78**, 045805 (2008).
73. “The Shear Viscosity and Thermal Conductivity of Nuclear Pasta”, C. J. Horowitz, and D. K. Berry, *Phys. Rev.* **C78**, 035806 (2008).
74. “Influence of light nuclei on neutrino-driven supernova outflows”, A. Arcones, G. Martinez-Pinedo, E. O’ Connor, A. Schwenk, H.-Th. Janka, C. J. Horowitz, and K. Langanke, *Phys. Rev.* **C78**, 015806 (2008).
75. “Shell States of Neutron Rich Matter”, C. J. Horowitz, and G. Shen, *Phys. Rev.* **C78**, 015801 (2008).
76. “Analyzing power in elastic scattering of electrons off a spin-0 target”, Mikhail Gorchtein and Charles J. Horowitz, *Phys. Rev.* **C77**, 044606 (2008).

77. “The Lead Radius Experiment (PREX) and Parity Violating Measurements of Neutron Densities”, C. J. Horowitz, Proceedings of the The Fourth Argonne/INT/MSU/JINA RIA Theory Workshop on Rare Isotopes and Fundamental Symmetries, 2008.
78. “Molecular dynamics simulations of the crust of accreting neutron stars”, C. J. Horowitz, Proceeding of the conference Nuclei in the Cosmos X, 2008.
79. “Molecular Dynamics Simulation of Shear Moduli for Coulomb Crystals”, C. J. Horowitz and J. Hughto, submitted to Phys. Rev. E, 2008.
80. “Neutrino Breakup of $A=3$ Nuclei in Supernovae”, E. O’Connor, D. Gazit, C.J. Horowitz, A. Schwenk, N. Barnea, Phys. Rev. **C 75** (2007) 055803.
81. “Phase separation in the crust of accreting neutron stars”, C. J. Horowitz, D. K. Berry, and E. F. Brown, Phys. Rev. **E 75** (2007) 066101.
82. “Effects of Ions Correlations in Supernovae and Neutron Star Crusts”, O.L. Caballero, and C. J. Horowitz, VII Latin American Symposium in Nuclear Physics and Applications Proceedings, AIP CP# 947, 2007.
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Book Edited

1. Spin Observables of Nuclear Probes, Editors C. J. Horowitz, C. Goodman and G. E. Walker, (Plenum Press, New York, 1989).

Book Chapters

1. Neutron Star Crust and Molecular Dynamics Simulation, C. J. Horowitz, J. Hughto, A. Schneider, D. K. Berry, Book Chapter, Neutron Star Crust, C. A. Bertulani, J. Piekarewicz, eds., Nova Publishing Co., arXiv:1109.5095, 2011.
2. The Relativistic Impulse Approximation, C. J. Horowitz, D. P. Murdock and Brian D. Serot, Computational Nuclear Physics Vol. I, S. E. Koonin, K. Langanke, J. Maruhn, M. Zirnbauer, eds. (Springer, New York) 1991.

Invited Talks

Invited Talks 2018

1. Neutron rich matter, neutron star mergers and laboratory experiments, Seminar, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Postdam, Germany (Dec. 2018).
2. Neutron star crust, crust mountains, and continuous gravitational waves, Colloquium, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Hannover, Germany (Dec. 2018).
3. Neutron rich matter, neutron star mergers, and laboratory experiments, Seminar, Institute for Nuclear Theory, Seattle, WA (Nov. 2018).
4. The neutron star merger GW170817 and neutron rich matter in the laboratory and in the heavens, Seminar, Lawrence Livermore National Laboratory, Livermore, CA (Sep. 2018).
5. Neutron star mergers, neutrinos, and neutron rich matter, Theory Seminar, SLAC, Palo Alto, CA (Sep. 2018).
6. Neutron stars, neutron star mergers, and neutron rich matter, ARIEL Science workshop, TRIUMF, Vancouver, Canada (July 2018).
7. Neutrino-nucleus interactions, Modeling neutrino-nucleus interactions, ECT*, Trento, Italy, (July 2018).
8. The neutron star merger GW170817 and neutron rich matter in the laboratory and in the heavens, Colloquium, Los Alamos National Laboratory, NM (June 2018).
9. Neutron rich matter in the laboratory and in the heavens after GW170817, Nuclear astrophysics in the new era of multi-messenger astronomy, World Science Festival, Columbia U., NY (May 2018).
10. Dense matter and the equation of state, Summer school lecture, Neutron star mergers for non-experts: gravitational waves and multi-messenger astronomy in the FRIB era, FRIB, MI (May 2018).
11. Neutron skins, neutron rich matter, and neutron stars, Bridging the standard model to new physics with parity violation, MITP, Mainz, Germany (April 2018).
12. Crust breaking on accreting stars, INT workshop: Astro-solids, dense matter, and gravitational waves, Seattle, WA (April 2018).
13. Gravitational waves and the dense matter equation of state, 1st Symposium on Intermediate-energy Heavy Ion Collisions (iHIC2018), Tsinghua University, Beijing, China (April 7-11, 2018).

14. Equation of state, NS deformability and fate of the remnant, INT JINA Symposium on GW170817, Seattle, WA (Mar. 2018).
15. GW170817 and neutron rich matter in the laboratory and heavens, Colloquium, TRIUMF, Vancouver, Canada (Mar. 2018).
16. The neutron star merger GW170817, Colloquium, Kent State U., Ohio (Feb. 2018).
17. Neutron rich matter and GW170817, Physics at the extreme (PAX): binary neutron star mergers, Penn State U., PA (Feb. 2018).
18. The neutron star merger GW170817, Colloquium, Indiana U. (Jan. 2018).

Invited Talks 2017

19. GW170817 and neutron rich matter in the laboratory and in the heavens, Colloquium, Columbia University, NY, NY (November 27, 2017).
20. Microphysics for supernova simulations, Conference, Supernova Neutrino Observations, Mainz Institute for Theoretical Physics, Mainz, Germany (October 2017).
21. Equation of state and neutrinos, Workshop, Electromagnetic Signatures of r-process Nucleosynthesis in Neutron Star Binary Mergers, INT, Seattle, WA (August 11, 2017).
22. Opportunities with the Spallation Neutron Source, Conference Neutrino Eclipse 2017, Knoxville, TN.
23. Mountains and gravitational waves, Workshop, Astrophysics of Gravitational Radiation Sources and Multimessenger Astronomy in the Era of LIGO Detections, Aspen Center for Physics, Aspen, CO. (July 2017).
24. Neutrino interactions in supernovae, Conference, Microphysics in Computational Relativistic Astrophysics (MICRA), MSU, East Lansing, MI (July 2017).
25. Electroweak scattering from (heavy) nuclei, JLAB Users meeting, Newport News, VA.
26. Neutron star crust and continuous gravitational waves, Workshop Nuclear Astrophysics in the Gravitational Wave Astronomy Era, ECT*, Trento, Italy.
27. Liquid, Gaseous, Solid neutron rich matter, Workshop Bridging nuclear and gravitational physics: the dense matter equation of state, ECT*, Trento, Italy.
28. Neutrino response in Supernova matter from transport models, International Workshop on Transport Simulations for Heavy Ion Collisions under Controlled Conditions, East Lansing, MI.

29. Nuclear pasta and parking garage structures in nuclear astrophysics and cellular biophysics, Colloquium at Argonne National Laboratory, Chicago (Joint with biophysicist Greg Huber KITP/UCSB).
30. Supernova neutrinos and nuclear physics, Workshop on Supernovae at Hyper-K, Tokyo, Japan.

Invited Talks 2016

31. Probing neutron rich matter with parity violation, April APS Meeting, Salt Lake City.
32. Neutron rich matter and the equation of state of cold dense QCD, Beam Energy Scan Theory Collaboration Meeting, Bloomington, IN.
33. Measuring the full ^{48}Ca weak charge density, Neutron skins of nuclei, MITP, Mainz, Germany.
34. Workshop Summary, Neutron skins of nuclei, MITP, Mainz, Germany.
35. Neutron rich matter, symmetry energy, and nuclear pasta, Program on nuclear physics of compact stars and mergers, Yukawa Institute, Kyoto, Japan.
36. Nuclear pasta, Physics and astrophysics of neutron star crusts, Institute for Nuclear Theory, Seattle.
37. Laboratory and Astronomical Observations of Neutron Rich Matter, Joint CNA/JINA-CEE Winter School on Nuclear Astrophysics, Shanghai, China.

Invited Talks 2015

38. Detecting supernovae via coherent scattering, Coherent Neutrino Scattering workshop, Raleigh, NC.
39. Nuclear pasta, ECT*, Trento, Italy.
40. Introduction to supernovae for heavy ion physicists, Asy-EOS 2015, Piazza Amerina, Sicily, Italy.
41. Large scale simulations of nuclear pasta, JINA-CEE meeting, East Lansing, MI.
42. Neutron skins of atomic nuclei and neutron stars, Colloquium, Johannes Gutenberg U., Mainz, Germany.
43. Simulating supernova neutrinosphere with HI collisions, Ten to fifty one ergs, Raleigh, NC.
44. Parity violating measurements of weak charge density, Intense Electron Beams Workshop, Ithaca, NY.
45. Neutrinos: setting the stage, MICRA 2015, Stockholm, Sweden.

46. Astromaterial science and nuclear pasta, Colloquium U. Mass., Amherst, MA.
47. Simulating the supernova neutrinosphere with heavy ion collisions including neutron rich radioactive beams, Pacificchem 2015, Honolulu, HI.

Invited Talks 2014

48. Laboratory and astronomical observations of dense matter, Ohio U., Athens, OH.
49. Simulating the supernova neutrinosphere with heavy ion collisions, Daejon, South Korea.
50. Laboratory and astronomical observations of dense matter, Joint workshop on RAON physics, Daejon, South Korea.
51. Prex, Crex, and Paul-Rex, Symposium in honor of Paul Souder, Skaneateles, NY.
52. Calculation of neutron skins in heavy nuclei, PAVI14, Skaneateles, NY.
53. The crust of merging neutron star, INT program on merging neutron stars, Seattle, WA.
54. Equation of state and neutrino interactions for nucleosynthesis, INT workshop on r-process, Seattle WA.
55. Neutron stars, Photonuclear Gordon Conference, Holderness, NH.
56. Defects in nuclear pasta, Stockholm, Sweden.
57. Large scale simulations of nuclear pasta, International Space Science Institute, Bern, Switzerland.

Invited Talks 2013

58. The Neutrinosphere problem, INT Seattle.
59. Nuclear pasta in astrophysics and NUCLEI, INT Seattle.
60. Brian and relativistic mean field theory, Symposium in Honor of Brian D. Serot, Bloomington, IN.
61. Parity violating measurements of neutron densities, CREX Workshop, JLAB, Newport News, VA.
62. Multi-messenger observations of neutron rich matter, CUSTIPEN workshop on exotic nuclei, Peking, China.
63. Multi-messenger observations of neutron rich matter, 15th National Conference on Intermediate and High Energy Nuclear Physics, Lanzhou, China.

64. Supernovae and the formation of nuclear pasta in low-density matter, Nuclear Chemistry Gordon Conference, Colby Sawyer College, NH.
65. Report on the first International Collaborations in Nuclear Theory program: “Symmetry Energy in the Context of New Radioactive Beam Facilities and Astrophysics”, Low Energy Community Meeting, East Lansing, MI.
66. Pycnonuclear reactions and pasta formation, International Space Science Institute, Bern, Switzerland.
67. Equation of state and neutrino interactions in supernovae, Conference on Microphysics in Computational Astrophysics, Trento, Italy.
68. MICRA 2013 Conference Summary, Conference on Microphysics in Computational Astrophysics, Trento, Italy.
69. Neutron rich matter , YIPQS Long Term Workshop: Supernovae and Gamma Ray Bursts, Kyoto, Japan.
70. Neutron rich matter, Seminar Washington U., St Louis.
71. Neutron rich matter for relativistic astrophysics, Plenary talk, 27th Texas Symposium on Relativistic Astrophysics, Dallas, TX.
72. Radiative corrections and QWEAK H and A1 measurements, Workshop “Gamma-Z Box(ing): Radiative corrections to parity-violating electron scattering”, JLAB, Newport News, VA.

Invited Talks 2012

73. The Lead Radius Experiment, seminar MSU/ NSCL.
74. The Lead Radius Experiment, seminar FSU.
75. Multi-messenger observations of neutron rich matter, WCU/Hanyang-APCTP Focus Program, Effective field theories, halos, drip-lines and EoS for compact stars, Pohang, Korea.
76. Equation of State in Astrophysics and Symmetry Energy, WCU/Hanyang-APCTP Focus Program, Effective field theories, halos, drip-lines and EoS for compact stars, Pohang, Korea.
77. Multi-messenger observations of neutron rich matter, Conference Intersections Particle and Nuclear Physics, St Petersburg, Fl.
78. Multi-messenger observations of neutron rich matter, CompStar: the physics and astrophysics of compact stars, Tahiti.
79. Overview of parity violating measurements of neutron densities, The Nuclear Dipole Polarizability and its Impact on Nuclear Structure and Astrophysics, Trento, Italy.

80. Lecture 1: neutron stars and their crusts, Lecture 2: supernovae, Lecture 3: nucleosynthesis and gravitational waves, National Nuclear Physics Summer School, Santa Fe, NM.
81. Multi-messenger observations of neutron rich matter, Core Collapse Supernova Program, Institute for Nuclear Theory, Seattle.
82. Neutron stars, neutrinos and gravitational waves, Low Energy Town Hall Meeting, Argonne, Ill.
83. Nuclear structure, neutron stars, and gravitational waves, Zakopane Conference, Poland.
84. Parity violating measurements of neutron densities, Workshop, Mainz, Germany.
85. Multi-messenger observations of neutron rich matter, seminar George Washington U.
86. Multi-messenger observations of neutron rich matter, seminar U. of Maryland.
87. Multi-messenger observations of neutron rich matter, Conference Quark Confinement and Hadron Spectrum X, (plenary talk), Munich, Germany.
88. Neutron rich nuclei and neutron stars, International Conference Fusion and Neutron Rich Nuclei 5, Sanibel Island, FL.
89. Multi-messenger observations of neutron rich matter, colloquium Vanderbilt.
90. Multi-messenger observations of neutron rich matter, seminar U. Kentucky.

Invited Talks 2011

91. Neutron rich matter, neutron stars, and their crusts, U. Tenn. (Colloquium) Jan.
92. The Equation of state of neutron rich matter, Joint Nuclear Physics and Particle Physics Division Meeting, Glasgow Scotland (plenary talk), April.
93. Neutron rich matter and supernovae, INT program: Fermions from Cold Atoms to Neutron Stars: Benchmarking the Many-Body Problem, May.
94. Clusters and a new supernova equation of state, ECT* program Clusters in Nuclei and Nuclear Matter: Nuclear Structure, Heavy Ion Collisions, and Astrophysics, Trento, Italy, June.
95. Neutron rich matter, neutron stars and their crusts, Darmstadt, Germany (colloquium), June.
96. Astrophysical equation of state, UNEDF Meeting 2011, East Lansing Mich., July.

97. Neutron star crust microphysics, Microphysics in Computational Relativistic Astrophysics conference, Waterloo, Canada, July.
98. Neutron star crust and crust breaking, INT program Astrophysical Transients, July.
99. PREX and radiative corrections, From Parity Violation to Hadronic Structure and more conference, Rome, Italy, Sept.
100. Multi-messenger observations of neutron rich matter, LIGO-Science collaboration web seminar, Sept.
101. Multi-messenger observations of neutron rich matter, Ohio State Univ. seminar, Oct.
102. Neutron rich matter in the laboratory and in astrophysics, Yukawa Institute Symposium 2011: Frontier issues in exotic nuclei, Kyoto Japan, Oct.
103. Multi-messenger observations of neutron rich matter, U. Wisconsin, Milwaukee (colloquium), Nov.
104. Pb radius experiment (PREX), Oak Ridge National Laboratory Physics Division seminar, Dec.
105. Pb radius experiment (PREX), Los Alamos National Laboratory seminar, Dec.

Invited Talks 2010

106. Supernova Detection via Neutrino-Nucleus Elastic Scattering, invited talk, Fifth symposium on large TPCs and low energy rare event detection and workshop on neutrinos from Supernovae, Paris, Dec., 2010.
107. Neutron rich matter, neutron stars, and their crusts, invited talk, Division of Nuclear Physics Meeting, Santa Fe, Nov., 2010.
108. Neutron rich matter in the cosmos and in the laboratory, colloquium, U. of Texas, Commerce, Oct., 2010.
109. Neutron Rich Matter, Neutron Stars and Their Crusts, invited plenary talk, International Nuclear Physics Conference, Vancouver, Ca, July 2010.
110. The Lead Radius Experiment and Radiative Corrections, invited talk, Electron-Nucleus Scattering XI, Elba, Italy June, 2010.
111. Neutron Rich Matter in the Laboratory and in the Cosmos, seminar, McGill, Apr., 2010.
112. Parity violating measurements of neutron densities: The Pb Radius Experiment (PREX) and beyond, invited talk, Reactions and Nucleon Properties in Rare Isotopes, ECT* Trento, Italy, Apr., 2010.

113. Pb Radius Experiment: Measuring a little bit of a neutron star in the laboratory, colloquium, Washington U., St Louis, Jan. 2010.

Invited Talks 2009

114. Lectures: 1 Molecular dynamics simulations of neutron stars and nuclear pasta, 2 Neutron star crust observables, 3 Nuclear pasta, C. J. Horowitz, Compstar09 School The crust of compact stars and beyond, Coimbra Portugal, Feb.
115. Astro-Material Science, Neutron Star Crust, and Gravitational Waves, C. J. Horowitz, Colloquium, Penn State, Feb.
116. Astro-Material Science, Neutron Star Crust, and Gravitational Waves, C. J. Horowitz, Colloquium, Indiana University, Mar.
117. Molecular Dynamics Simulations of Accreting Neutron Star Crust, C. J. Horowitz, Defining the neutron star crust, Santa Fe, May.
118. Neutron stars at JLAB and the Lead Radius Experiment, C. J. Horowitz, JLAB users group meeting, Newport News, June.
119. Crust Crystallography, C. J. Horowitz, Probing Neutron Stars with Gravitational Waves, State College Penn., June.
120. The Pb Radius Experiment (PREX), C. J. Horowitz, Nuclear Physics Gordon Conference, June.
121. Astro-Material Science, Neutron Star Crust and Gravitational Waves, C. J. Horowitz, Neutron Stars The Crust and Beyond, Stockholm, Sept.
122. Neutron-rich Matter in the Cosmos and in the Laboratory, C. J. Horowitz, Colloquium, Saint Marys University, Halifax, Oct.
123. The Pb Radius Experiment (PREX), C. J. Horowitz, Colloquium, Old Dominion University, Oct.

Invited Talks 2008

124. Coulomb distortions in the Lead Radius Experiment, C. J. Horowitz, The 208Pb Radius Experiment and Neutron Rich Matter in the Heavens and on Earth Conference, Newport News, Aug. 19.
125. Molecular Dynamics Simulation of Accreting Neutron Star Crust, C.J. Horowitz, Seminar MSU, Oct. 1.
126. The Lead Radius Experiment, C. J. Horowitz, Seminar Argonne National Laboratory, Nov. 17.
127. PREX and Bulk Properties of Neutron Rich Matter, C. J. Horowitz, FRIB Workshop on Bulk Nuclear Properties, MSU, Nov. 22.

Invited Talks 2007

- 128. Three Nucleon Forces, C. J. Horowitz, Summary talk conference: “Three-nucleon interactions from few to many-body systems”, TRIUMF, Vancouver.
- 129. Fundamental Neutron Physics in Supernovae, C. J. Horowitz, Program “Fundamental neutron physics”, INT, Seattle.
- 130. Neutron rich matter and neutron star crusts, C. J. Horowitz, Workshop on the Neutron Star Crust and Surface: Observations and Models, INT Seattle.
- 131. Parity Radius Experiment and Neutron Densities, C. J. Horowitz, Workshop on Rare Isotopes and Fundamental Symmetries, Seattle, Sep.
- 132. Molecular Dynamics Simulations of Dense Matter in Neutron Star Crusts, C. J. Horowitz, Conference “Matter at Extreme Densities and Gravitational Waves from Compact Objects”, Trento, Italy, 2007.
- 133. Molecular Dynamics Simulations of Dense Matter in Neutron Star Crusts, C. J. Horowitz, Seminar Argonne National Laboratory, Chicago, Dec.

Invited Talks 2006

- 134. Low Density Neutron Rich Matter, C. J. Horowitz, Seminar, Ohio University.
- 135. Links between Heavy Ion and Astrophysics, C. J. Horowitz, Conference: The XV GANIL Colloquium, Giens France.
- 136. Astronomer’s Guide to Dense Theory, C. J. Horowitz, Conference: In Heaven and On Earth 2006: The Nuclear Equation of State in Astrophysics, Montreal, Canada.
- 137. The Neutrino Response in Supernovae, C. J. Horowitz, Program: Neutrino Response Functions from Threshold to 10 GeV, INT, Seattle.
- 138. Neutron Rich Matter, C. J. Horowitz, Conference: Quark Confinement and Hadron Spectrum 7, Azores, Portugal.
- 139. Low Density Neutron Rich Matter, C. J. Horowitz, Seminar, TRIUMF, Vancouver.

Invited Talks 2005

- 140. Quark-hadron and nucleon-nucleus duality in dense matter, C. J. Horowitz, Conference Matter Inside Neutron Stars, Mexico City, Mexico, January.
- 141. Nuclear Pasta, C. J. Horowitz, Seminar at UNAM, Mexico City, Mexico, January.
- 142. Neutron Rich Matter in Heaven and Earth, C. J. Horowitz, Seminar at North Carolina State University, January.

143. Links between Heavy Ion and Astrophysics, C. J. Horowitz, Conference “World Consensus Initiative III”, Texas A&M University, College Station, TX, February.
144. Links between Heavy Ion and Astrophysics, C. J. Horowitz, Seminar at Michigan State University, March.
145. Neutron Rich Matter in Heaven and Earth, C. J. Horowitz, Seminar at Ohio University, Athens, OH, April.
146. A Clean Supernova Neutrino Detector, C. J. Horowitz, CLEAN workshop, Yale, June.
147. Cluster Formation and the Virial Equation of State of Low-density Nuclear Matter, C. J. Horowitz, Program Nuclear Forces and QCD: Never the Twain Shall Meet, ECT*, Trento, Italy, June.
148. Neutron Rich matter in Astrophysics and in the Laboratory, C. J. Horowitz, Colloquium, GSI, Darmstadt, Germany, June.
149. Supernova Neutrinos before Oscillations, C. J. Horowitz, Workshop Implications of Neutrino Oscillations, Santa Fe, New Mexico, July.
150. Equation of State and Neutrino Interactions in Supernovae, C. J. Horowitz, Workshop Supernova Neutrinos, Santa Fe, New Mexico, July.
151. Nuclear Pasta, C. J. Horowitz, Seminar at TRIUMF, Vancouver, B.C. Canada, August.
152. Neutron Rich Matter, C. J. Horowitz, Conference Neutron Stars at the Crossroads of Fundamental Physics, Vancouver, BC, August.
153. The Future of Neutron Rich Matter in Heaven and Earth, C. J. Horowitz, Summary talk of workshop “Neutron-rich Nuclei in Nuclear Astrophysics”, Division of Nuclear Physics Meeting, Hawaii, September.
154. Low Density Nuclear Matter, Cluster Formations, and the Virial Expansion: Implications for Density Functionals, C. J. Horowitz, Workshop: Towards a Universal Density Functional for the Nucleus, INT, Seattle, September.
155. Nuclear Pasta in Condensed Matter and Astrophysics, C. J. Horowitz, Seminar at the University of Waterloo, Waterloo, ON, Canada, November.
156. Nuclear Pasta, C. J. Horowitz, Seminar at Texas A&M University, College Station, TX, November.
157. Parity Radius Experiment: The Structure of Neutron Rich Nuclei and Neutron Stars, C. J. Horowitz, Pacificchem 2005 Conference, Science with Rare Isotope Beams Program, Honolulu, Hawaii, December.

Invited Talks 2004

- 158. Nuclear Pasta, C. J. Horowitz, Physics Seminar, Los Alamos, NM, March.
- 159. Parity Violation in Astrophysics, C. J. Horowitz, Parity violation and hadronic structure conference, Gernoble, France, June.
- 160. The Parity Radius Experiment, C. J. Horowitz, Nuclear Chemistry Gordon Conference, Colby-Sawyer College, New Hampshire, June.
- 161. Neutrino Interactions in Dense Matter, C. J. Horowitz, SN and Gamma Ray Bursts Program, Institute for Nuclear Theory, Seattle, June.
- 162. Supernovae and Neutron Rich Matter, C. J. Horowitz, Invited Lectures, Summer School on Nuclear Collective Dynamics, Istanbul, Turkey, July.
- 163. The Parity Radius Experiment and Dense Matter, C. J. Horowitz, Nuclear Equation of State Workshop, American Chemical Society Conference, Philadelphia, PA, August.
- 164. Nuclear Pasta, C. J. Horowitz, Novel Approaches to the Nuclear Many-Body Problem, ECT*, Trento, Italy, September.
- 165. Neutrino-Nucleon Elastic Scattering, C. J. Horowitz, Proton Driver Workshop, FermiLab, Ill, October.

Invited Talks 2003

- 166. Neutron Stars and Neutron Rich Nuclei, C. J. Horowitz, International Conference on Relativistic Structure Models for the Physics of Radioactive Nuclear Beams, Bad Honnef, Germany, May.
- 167. Neutrino interactions in dense matter, C. J. Horowitz, Supernova Program, Aspen Center for Physics, Aspen, CO, June.
- 168. Supernova neutrinos and elastic scattering, C. J. Horowitz, Weak Interactions in Nuclei and Astrophysics: Standard Model and Beyond, ECT*, Trento, Italy, June.
- 169. The Parity Radius Experiment, C. J. Horowitz, LOWQ03: 2nd Workshop on Electromagnetic Nuclear Reactions at Low Momentum Transfer, Halifax, Canada, July.
- 170. Charge Symmetry Breaking and $dd \rightarrow {}^4\text{He} \pi^0$, C. J. Horowitz, Nuclear Physics Gordon Conference, Waterville, Maine, July.
- 171. The Structure of Neutron Rich Nuclei and Neutron Stars, C. J. Horowitz, Physics and Astrophysics of Neutron Stars, Santa Fe, New Mexico, August.
- 172. Supernova Neutrinos, C. J. Horowitz, Nuclear Physics Seminar, University of Kentucky, Feb.
- 173. Charge Symmetry Breaking, C. J. Horowitz, Nuclear Physics Seminar, Institut für Kernphysik, Forschungszentrum Jlich, Germany, Sep.

- 174. Charge Symmetry Breaking, C. J. Horowitz, Nuclear Physics Seminar, University of Ill., Oct.
- 175. Neutrino Interactions in Dense Matter, C. J. Horowitz, Institute for Nuclear Theory Program on Nuclear Forces, Seattle, WA, Dec.

Invited Talks 2002

- 176. Neutrino-nucleon and Nucleus Elastic Scattering, C. J. Horowitz, Hadronic Structure and GeV Electroweak Reactions, Argonne, Il, July
- 177. Neutrino Interactions and the R-process, C. J. Horowitz, Nucleosynthesis Program, Institute for Nuclear Theory, Seattle, WA, May
- 178. Neutrino Elastic Scattering in Heaven and Earth, C. J. Horowitz, Neutron Interactions at GeV Energies, Irvine, CA, December
- 179. Supernova Detection Via Neutrino-nucleus Scattering, C. J. Horowitz, Aspen Workshop on Underground Science, Aspen, CO, May
- 180. Charge Symmetry Breaking in $dd \rightarrow {}^4He\pi^0$, C. J. Horowitz, Institute for Nuclear Theory Program on Fundamental Symmetries, Seattle, WA, October

Invited Talks 2001

- 181. Neutrino Nucleus Scattering; Symmetries, Supernovae and Strange Quarks, C. J. Horowitz, Seminar, Florida State University, April.
- 182. Neutron Density Measurements and Atomic Parity Nonconservation, C. J. Horowitz, Jefferson Laboratory, June.
- 183. The Neutron Radius of Pb208 and Neutron Stars, C. J. Horowitz, INT Workshop on Neutron Stars, Seattle, WA, June.
- 184. The Density Dependence of Charge Symmetry Breaking, C. J. Horowitz, Workshop on $d + d$ to $\alpha\pi^0$ and CSB, Seattle, WA, August.
- 185. The Radii of Neutron Stars and Finite Nuclei, C. J. Horowitz, Seminar, Ohio University, November.
- 186. Parity Violating Measurements of Neutron Radii and Neutron Star Properties, C. J. Horowitz, International Symposium on Electromagnetic Interactions in Nuclear and Hadronic Physics, Osaka, Japan, December.

Invited Talks 2000

- 187. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, Conference on Strange Quarks in Hadrons, Nuclei, and Nuclear Matter, Athens, Ohio, May, 2000.

- 188. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, Bologna 2000 - Structure of the Nucleus at the Dawn of the Century Conference, Bologna, Italy, June, 2000.
- 189. Interpreting Neutron Density Measurements, C. J. Horowitz, Workshop on Parity Violation in Atomic, Nuclear, and Hadronic Systems, Trento, Italy, June, 2000.
- 190. Parity Violating in Supernovae, C. J. Horowitz, Workshop on Parity Violation in Atomic, Nuclear, and Hadronic Systems, Trento, Italy, June, 2000.
- 191. Strange Quark Structure of the Nucleon Via Neutrinos and Parity Violation, C. J. Horowitz, Colloquium, University of Houston, Houston, Texas, September, 2000.

Invited Talks 1999

- 192. Symmetry Breaking in Supernovae, C. J. Horowitz, Nuclear Theory Seminar, University of Kentucky, April
- 193. Neutron Radius Experiments, C. J. Horowitz, Parity Mini-Workshop, Newport News, VA, May
- 194. Nucleosynthesis in Supernovae, C. J. Horowitz, Low Energy Neutrino Program, INT, Seattle, WA, June
- 195. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, University of Kentucky, October
- 196. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, Ohio State University, October
- 197. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, Ohio University, October
- 198. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, Florida State, November
- 199. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, Michigan State, November
- 200. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, TRIUMF, Vancouver, B.C., November
- 201. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, University of Washington, November
- 202. Parity Violating Measurements of Neutron Densities, C. J. Horowitz, Argonne National Laboratory, December

Invited Talks 1998

203. Neutrino Interactions in Dense Matter and Supernovae, C. J. Horowitz, Stony Brook, April
204. Cumulative Parity Violation in Supernovae, C. J. Horowitz, XXII International Workshop on Condensed Matter Theories, Nashville, TN June
205. Symmetry Breaking in Supernovae, C. J. Horowitz, Colloquium, Vanderbilt University, December

Invited Talks 1997

206. Relativistic Models of Quasielastic Scattering, C. J. Horowitz, Workshop on Hadron Dynamics, Kyoto, Japan, March.
207. Relativistic Nuclear Models, C. J. Horowitz, European Center for Theoretical Nuclear Physics, workshop on High Density Matter, Trento, Italy, May.
208. The Electroweak Response, C. J. Horowitz, Institute for Nuclear Theory, workshop on Microscopic Nuclear Structure, Seattle, WA, December.

Invited Talks 1996

209. Screening in Supernova, C. J. Horowitz, Int'l Workshop on Supernovae and Neutron Stars, Trento, Italy, June.
210. Supernovae, C. J. Horowitz, Seminar at GSI Darmstadt, Germany, June.
211. Screening in Supernovae, C. J. Horowitz, Astroparticle Symposium, Max Planck Institute, Gachina, Germany, June.
212. Neutrinos and Supernovae, C. J. Horowitz, Colloquium, Argonne National Laboratory, Chicago, Il, November.

Invited Talks 1995

213. Relativistic Nuclear Physics, C. J. Horowitz, Five lectures at Int'l Summer School on Nuclear Physics, Sao Paulo, Brazil, January.
214. Relativistic Models of Nuclei and Nuclear Reactions, C. J. Horowitz, South African Institute of Physics Int'l Conference, Capetown, South Africa, July.
215. Modeling the Densest Matter in the Universe, C. J. Horowitz, Nonspecialist lecture, South African Institute of Physics Int'l Conference, Capetown, South Africa, July.
216. Charge Symmetry Breaking and the Isospin Violation in the Nucleon, C. J. Horowitz, Workshop on Parity Violation and Compound Nuclear States and Related Topics, European Center for Theoretical Physics, Trento, Italy, October.

217. Relativistic Models of Parity Violation, C. J. Horowitz, Workshop on Parity Violation and Compound Nuclear States and Related Topics, European Center for Theoretical Physics, Trento, Italy, October.

Invited Talks 1994

218. Relativistic Models of the Spin-Isospin-Weak Quasielastic Response, C. J. Horowitz, Int'l Symposium on Spin-Isospin Responses and Weak Processes in Hadrons and Nuclei, Osaka, Japan, March.
219. Neutrino Interactions in Dense Matter, C. J. Horowitz, Institute for Nuclear Theory, Seattle, Washington, May.

Invited Talks 1993

220. Parity Violation in Quasielastic Electron Scattering, C. J. Horowitz, CEBAF Meeting, Snowshoe, WV, May.
221. Relativistic Effects in Pion Production, C. J. Horowitz, Ohio University, April.

Invited Talks 1992

222. Quark Models of Nuclear Matter, C. J. Horowitz, XV Nuclear Physics Symposium, Oaxtapec, Mexico, Jan.
223. The Electroweak Response in Relativistic RPA, C. J. Horowitz, Dirk Walecka 60th Birthday Symposium, CEBAF, Newport News, VA, April.
224. Relativistic Descriptions of Quasifree Scattering, C. J. Horowitz, TRIUMF, Vancouver, Canada, May.
225. Relativistic Nuclear Structure, C. J. Horowitz, Institute for Nuclear Theory, Seattle, WA, Oct.
226. Electroweak Currents in Relativistic Models, C. J. Horowitz, University of Washington, Seattle, WA, Nov.

Invited Talks 1991

227. Quark Models of Nuclear Matter, C. J. Horowitz, Supercomputer Computations Research Institute, Florida State, January.
228. Relativistic Effects on Spin Observables, C. J. Horowitz, Int'l Conference on Spin and Isospin in Nuclear Reactions, Telluride, CO, March.
229. Relativistic Effects on Spin Observables, C. J. Horowitz, Lampf, Los Alamos, May.
230. Quark Models of Nuclear Matter, C. J. Horowitz, TRIUMF, July.

- 231. Relativistic Mean Field Theory, C. J. Horowitz, Series of Lectures at Summer Nuclear Institute, TRIUMF, July
- 232. Electromagnetic Currents in Relativistic Meson-Nucleon Models, C. J. Horowitz, Workshop on The Nuclear Hamiltonian and Electromagnetic Current for the 1990s, Argonne, IL, August.
- 233. Quark Models of Dense Matter, C. J. Horowitz, Carleton, Ottawa, November.
- 234. Quark Models of Dense Matter, C. J. Horowitz, Boulder, CO, November.
- 235. Quark Model Calculations, C. J. Horowitz, Washington University, St. Louis, MO, November.
- 236. Relativistic RPA for Quasielastic e, p , and ν Scattering, C. J. Horowitz, INT, Seattle, WA, December.

Invited Talks 1987-90

- 237. Quasielastic Proton Scattering: Relativity and Spin Observables, C. J. Horowitz, Nuclear Structure Gordon Conference, Tilton, N. Hampshire, August, 1987.
- 238. Density Momentum and Frame Dependence of the Optical Potential: Implications of Relativity, C. J. Horowitz, Gross Properties of Nuclei and Nuclear Excitations International Workshop XVI, Hirschegg, Kleinwalsertal, Austria, January, 1988.
- 239. The Relativistic Nuclear Response, C. J. Horowitz, International Conference on Spin Observables of Nuclear Probes, Telluride, Colorado, March, 1988.
- 240. Relativistic RPA Response of Nuclear Matter, C. J. Horowitz, Workshop on Relativistic Nuclear Many-Body Physics, Columbus, Ohio, June, 1988.
- 241. Relativistic Effects on Quasielastic Spin Observables, C. J. Horowitz, 3rd Conference on the Intersections Between Particle and Nuclear Physics, Rockport, Maine, May, 1988.
- 242. Relativistic Nuclear Structure, C. J. Horowitz, International Conference on Contemporary Topics in Nuclear Structure, Cocoyoc, Mexico, June, 1988.
- 243. Quantum Hadrodynamics and the Dynamical Quantum Vacuum, C. J. Horowitz, Conference on Nuclear and Particle Physics on the Light Cone, Los Alamos, NM, July, 1988.
- 244. Hot and Cold Nuclear Fusion, C. J. Horowitz, Nuclear Physics Gordon Conference, Tilton, New Hampshire, July, 1989.
- 245. Electromagnetic Currents in the 1990's, C. J. Horowitz, APS/DNP Town Meeting on Nuclear Theory, East Lansing, MI, April, 1989.
- 246. Towards a Relativistic Nuclear Reaction Theory, C. J. Horowitz, Dubna, USSR, February, 1990.

247. Towards a Relativistic Nuclear Reaction Theory, C. J. Horowitz, Novosibirsk USSR, March, 1990.
248. Towards a Relativistic Nuclear Reaction Theory, C. J. Horowitz, University of Iowa, Ames, Iowa, April, 1990.
249. Electromagnetic Currents in Relativistic Models, C. J. Horowitz, Gordon Conference on Photonuclear Reactions, Tilton, New Hampshire, August, 1990.
250. Relativistic Meson-Nucleon Models, C. J. Horowitz, Lecture Series at Dronten Summer School, Dronten, Holland, August, 1990.