

Jeremy Holt

Curriculum Vitae

Assistant Professor
Texas A&M University
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Education

- 2002 **Honors B.A. in Physics**, *University of Michigan, Flint*
- 2002 **B.S. in Mathematics**, *University of Michigan, Flint*
- 2002 **B.A. in Philosophy**, *University of Michigan, Flint*
- 2004 **M.A. in Physics**, *State University of New York, Stony Brook*
- 2008 **Ph.D. in Physics**, *State University of New York, Stony Brook*

Professional Experience

- 2016 – **Assistant Professor**, *Texas A&M University, College Station*
- 2016 – **Affiliate Assistant Professor**, *University of Washington, Seattle*
- 2014 – 2015 **Research Assistant Professor**, *University of Washington, Seattle*
- 2012 – 2014 **Research Associate in Physics**, *University of Washington, Seattle*
- 2008 – 2012 **Postdoctoral Research Fellow**, *Technical University of Munich*

Awards and Honors

- 2014 **United Kingdom Rutherford Fellowship (declined)** *5-year, £530,000 (\$730,000)*
- 2008 **Max Dresden Prize** *Best theory dissertation in physics, SUNY-Stony Brook*
- 2008 **President's Award for Distinguished Doctoral Students** *SUNY-Stony Brook*
- 2002 **GAANN fellowship** *SUNY-Stony Brook*
- 2002 **Maize and Blue Award** *Highest award for academic excellence, U Michigan-Flint*
- 2002 **Caldwell Mathematics Prize** *Highest achievement in mathematics, U Michigan-Flint*

Teaching Experience

- 2015 **Seminar in Nuclear Theory** *Organizer, U Washington*
- 2015 **Classical Mechanics** *Lecture assistant, U Washington*
- 2014 **Seminar in Nuclear Theory** *Organizer, U Washington*
- 2014 **Graduate Electromagnetism and Relativity** *Lecture assistant, U Washington*
- 2013 **General Physics** *Lecture assistant, U Washington*
- 2013 **Graduate Electromagnetism and Relativity** *Lecture assistant, U Washington*
- 2012 **Gauge Thermal Field Theories** *Tutorial, Technical University of Munich*

2011	Thermal Field Theory	<i>Tutorial, Technical University of Munich</i>
2011	Gauge Thermal Field Theories	<i>Tutorial, Technical University of Munich</i>
2010	Quantum Physics II	<i>Special topics tutorial, Technical University of Munich</i>
2010	Thermal Field Theory	<i>Tutorial, Technical University of Munich</i>
2009	Quantum Physics II	<i>Special topics tutorial, Technical University of Munich</i>
2009	Nuclear and Particle Physics II	<i>Tutorial, Technical University of Munich</i>
2008	Nuclear and Particle Physics I	<i>Tutorial, Technical University of Munich</i>
2006	Graduate Nuclear Physics I	<i>Lecture assistant, SUNY-Stony Brook</i>
2005	Graduate Nuclear Physics II	<i>Lecture assistant, SUNY-Stony Brook</i>
2004	Nuclear and Particle Physics	<i>Lecture assistant, SUNY-Stony Brook</i>
2004	Physics for Life Sciences I	<i>Lab instructor, SUNY-Stony Brook</i>

Mentoring

2016 –	Alex Fleming	<i>Ph.D. supervision, Texas A&M University</i>
2013 –	Corbinian Wellenhofer	<i>Ph.D. co-supervision, Technical University of Munich</i>
2012 – 2013	Corbinian Wellenhofer	<i>Diploma thesis co-supervision, Technical University of Munich</i>

Conference Organization

2016	Advances in transport and response properties of strongly interacting systems	ECT*, Organizers: Y. Burnier, J. W. Holt, A. Lovato and A. Roggero
2015	Observations and theory in the dynamics of neutron stars	ECT*, Organizers: N. Chamel, J. W. Holt, A. Rios and G. Shen

Refereed Journals

Physical Review Letters
Physical Review C
European Physics Journal A
International Journal of Modern Physics E
Zeitschrift für Naturforschung A
Advances in Applied Clifford Algebras

Professional Organizations

American Physical Society
FRIB Theory Alliance
JINA-CEE

Media Coverage of Research

- 2008 **Unraveling carbon's chemical secrets** Rachel Courtland, *Nature News*
- 2008 **Chance structure makes carbon dating possible** Bella Dumé, *Physics World online*
- 2008 **Solving the carbon-14 mystery** Phil Berardelli, *Science Now*
- 2008 **A new calculation explains the mechanism behind carbon dating** Phil Schewe, *Physics News Update 854*

Publications

Published papers in peer-reviewed journals

- 2016 **J. W. Holt, N. Kaiser and G. A. Miller**, "Microscopic optical potential for exotic isotopes from chiral effective field theory", *Phys. Rev. C* 93 (2016) 064603.
- 2016 **E. Rrapaj, A. Roggero and J. W. Holt**, "Microscopically constrained mean-field models from chiral nuclear thermodynamics", *Phys. Rev. C* 93 (2016) 065801, *Editors' Suggestion*.
- 2016 **C. Wellenhofer, J. W. Holt and N. Kaiser**, "Divergence of the isospin-asymmetry expansion of the nuclear equation of state in many-body perturbation theory", *Phys. Rev. C* 93 (2016) 055802.
- 2016 **T. T. S. Kuo, J. W. Holt and E. Osnes**, "Introduction to low-momentum effective interactions with Brown-Rho scaling and three-nucleon forces", *Phys. Scr.* 91 (2016) 033009.
- 2016 **J. W. Holt, M. Rho and W. Weise**, "Chiral symmetry and effective field theories for hadronic, nuclear and stellar matter", *Phys. Rept.* 621 (2016) 2.
- 2015 **C. Wellenhofer, J. W. Holt and N. Kaiser**, "Thermodynamics of isospin-asymmetric nuclear matter from chiral effective field theory", *Phys. Rev. C* 92 (2015) 015801.
- 2015 **F. Sammarruca, L. Coraggio, J. W. Holt, N. Itaco, R. Machleidt and L. Marcucci**, "Toward order-by-order calculations of the nuclear and neutron matter equations of state in chiral effective theory", *Phys. Rev. C* 91 (2015) 054311.
- 2015 **E. Rrapaj, J. W. Holt, A. Bartl, S. Reddy and A. Schwenk**, "Charged-current reactions in the supernova neutrino-sphere", *Phys. Rev. C* 91 (2015) 035806.
- 2015 **D. Davesne, J. W. Holt, A. Pastore and J. Navarro**, "Effect of three-body forces on response functions in infinite neutron matter", *Phys. Rev. C* 91 (2015) 014323.
- 2014 **G. Wlazłowski, J. W. Holt, S. Moroz, A. Bulgac and K. Roche**, "Auxiliary-field quantum Monte Carlo simulations of neutron matter in chiral effective field theory", *Phys. Rev. Lett.* 113 (2014) 182503.
- 2014 **S. Maurizio, J. W. Holt and P. Finelli**, "Nuclear pairing from microscopic forces: singlet channels and higher-partial waves", *Phys. Rev. C* 90 (2014) 044003.
- 2014 **Y. Tzeng, S.-Y. T. Tzeng, T. T. S. Kuo and J. W. Holt**, "Binding energy of ^{16}O in the ring diagram method with chiral two- and three-nucleon low-momentum interactions", *Chin. J. Phys.* 52 (2014) 1450.

- 2014 **H. Dong, T. T. S. Kuo and J. W. Holt**, “Non-degenerate shell-model effective interactions from the Okamoto-Suzuki and Krenciglowa-Kuo iteration methods”, *Nucl. Phys. A* 930 (2014) 1.
- 2014 **C. Wellenhofer, J. W. Holt, N. Kaiser and W. Weise**, “Nuclear thermodynamics from chiral low-momentum interactions”, *Phys. Rev. C* 89 (2014) 064009.
- 2014 **T. T. S. Kuo and J. W. Holt**, “Core polarization, Brown-Rho scaling and a memory of Gerry’s Princeton years”, *Nucl. Phys. A* 928 (2014) 30.
- 2014 **L. Coraggio, J. W. Holt, N. Itaco, R. Machleidt, L. Marcucci and F. Sammarruca**, “The nuclear matter equation of state with consistent two- and three-body perturbative chiral interactions”, *Phys. Rev. C* 89 (2014) 044321.
- 2013 **J. W. Holt, N. Kaiser and W. Weise**, “Nuclear chiral dynamics and thermodynamics”, *Prog. Part. Nucl. Phys.* 73 (2013) 35.
- 2013 **J. W. Holt, N. Kaiser, G. A. Miller and W. Weise**, “Microscopic optical potential from chiral nuclear forces”, *Phys. Rev. C* 88 (2013) 024614.
- 2013 **J. W. Holt, N. Kaiser and W. Weise**, “Chiral Fermi liquid approach to neutron matter”, *Phys. Rev. C* 87 (2013) 014338, *Editors’ Suggestion*.
- 2013 **L. Coraggio, J. W. Holt, N. Itaco, R. Machleidt and F. Sammarruca**, “Reduced regulator dependence of neutron-matter predictions with perturbative chiral interactions”, *Phys. Rev. C* 87 (2013) 014322.
- 2012 **J. W. Holt, N. Kaiser and W. Weise**, “Quasiparticle interaction in nuclear matter with chiral three-nucleon forces”, *Nucl. Phys. A* 876 (2012) 61.
- 2011 **J. W. Holt, N. Kaiser and W. Weise**, “Nuclear energy density functional from chiral two- and three-nucleon interactions”, *Eur. Phys. J. A* 47 (2011) 128.
- 2011 **J. W. Holt, N. Kaiser and W. Weise**, “Second-order quasiparticle interaction in nuclear matter with chiral two-nucleon forces”, *Nucl. Phys. A* 870-871 (2011) 1.
- 2010 **J. W. Holt, N. Kaiser and W. Weise**, “Density-dependent effective nucleon-nucleon interaction from chiral three-nucleon forces”, *Phys. Rev. C* 81 (2010) 024002.
- 2009 **L.-W. Siu, J. W. Holt, T. T. S. Kuo and G. E. Brown**, “Low-momentum NN interactions and all-order summation of ring diagrams of symmetric nuclear matter”, *Phys. Rev. C* 79 (2009) 054004.
- 2009 **J. W. Holt, N. Kaiser and W. Weise**, “Chiral three-nucleon interaction and the carbon-14 dating beta decay”, *Phys. Rev. C* 79 (2009) 054331.
- 2009 **G. E. Brown, M. Harada, J. W. Holt, M. Rho and C. Sasaki**, “Hidden local field theory and dileptons in relativistic heavy ion collisions”, *Prog. Theor. Phys.* 121 (2009) 1209.
- 2008 **J. W. Holt, G. E. Brown, T. T. S. Kuo, J. D. Holt and R. Machleidt**, “Shell model description of the ^{14}C dating β -decay with Brown-Rho-scaled NN interactions”, *Phys. Rev. Lett.* 100 (2008) 062501.

- 2007 **J. D. Holt, N. Pietralla, J. W. Holt, T. T. S. Kuo and G. Rainovski**, “Microscopic restoration of proton-neutron mixed symmetry in weakly collective nuclei”, *Phys. Rev. C* 76 (2007) 034325.
- 2007 **J. W. Holt, G. E. Brown, J. D. Holt and T. T. S. Kuo**, “Nuclear matter with Brown-Rho-scaled Fermi liquid interactions”, *Nucl. Phys. A* 785 (2007) 322.
- 2007 **G. E. Brown, J. W. Holt, C.-H. Lee and M. Rho**, “Vector manifestation and matter formed in relativistic heavy-ion processes”, *Phys. Rept.* 439 (2007) 161.
- 2007 **D. Hestenes and J. W. Holt**, “The crystallographic space groups in geometric algebra”, *J. Math. Phys.* 48 (2007) 023514.
- 2006 **J. N. Orce, J. D. Holt, A. Linnemann, C. J. McKay, S. R. Lesher, C. Fransen, J. W. Holt, A. Kumar, N. Warr, V. Werner, J. Jolie, T. T. S. Kuo, M. T. McEllistrem, N. Pietralla and S. W. Yates**, “Identification of mixed-symmetry states in an odd-mass nearly spherical nucleus”, *Phys. Rev. Lett.* 97 (2006) 062504.
- 2005 **J. D. Holt, J. W. Holt, T. T. S. Kuo, G. E. Brown and S. K. Bogner**, “Low momentum shell model effective interactions with all-order core polarization”, *Phys. Rev. C* 72 041304(R) (2005).

Edited Works (1)

- 2010 **G. E. Brown, T. T. S. Kuo, J. W. Holt and S. Lee**, *The Nucleon-Nucleon Interaction and the Nuclear Many-Body Problem: Selected papers of Gerald E. Brown and T. T. S. Kuo*, (World Scientific, Singapore, 2010).

Book Chapters (2)

- 2011 **J. W. Holt, N. Kaiser and W. Weise**, “Density-dependent nuclear interactions and the beta decay of ^{14}C : chiral three-nucleon forces and Brown-Rho scaling” in *From Nuclei to Stars: Festschrift in honor of Gerald E. Brown*, ed. by S. Lee (World Scientific, Singapore, 2011).
- 2006 **J. W. Holt and G. E. Brown**, “Hans Bethe and the nuclear many-body problem” in *Hans Bethe and His Physics*, ed. by G. E. Brown and C.-H. Lee (World Scientific, Singapore, 2006).

Conference Proceedings (7)

- 2016 **F. Sammarruca, L. Coraggio, J. W. Holt, N. Itaco, R. Machleidt and L. E. Marcucci**, “How well does the chiral expansion converge in nuclear and neutron matter?”, PoS CD15 (2016) 026.
- 2016 **L. Coraggio, A. Gargano, J. W. Holt, N. Itaco, R. Machleidt, L. E. Marcucci and F. Sammarruca**, “Chiral nucleon-nucleon forces in nuclear structure calculations”, *arXiv:1602.03380*, Proceedings of “Nucleus-Nucleus 2015” conference.
- 2015 **P. Finelli, S. Maurizio and J. W. Holt**, “Nuclear pairing from two-body microscopic forces: analysis of the Cooper pair wavefunctions”, *EPJ WoC* 95 (2015) 04021, Proceedings of ICNFP2014.

- 2014 **S. Maurizio, J. W. Holt and P. Finelli**, “Numerical analysis of the $1S_0$ pairing gap in neutron matter”, Proceedings of PANIC14.
- 2014 **L. Coraggio, J. W. Holt, N. Itaco, R. Machleidt, L. E. Marcucci and F. Sammarruca**, “Study of nucleonic matter with a consistent two- and three-body perturbative chiral interaction”, *J. Phys. Conf. Ser.* 527 (2014) 012010.
- 2012 **J. W. Holt, N. Kaiser and W. Weise**, “Chiral nuclear dynamics with three-body forces”, *Prog. Part. Nucl. Phys.*, 67 (2012) 353.
- 2005 **T. T. S. Kuo, J. D. Holt, J. W. Holt, G. E. Brown and S. K. Bogner**, “Kirsan-Babu-Brown core polarization diagrams and low-momentum shell model effective interactions”, *J. Phys. Conf. Ser.* 20 (2005) 1.

Presentations (57)

Invited physics colloquia and invited meeting presentations (4)

- 2015 **“Hot and dense neutron-rich matter in supernovae and neutron star mergers”**
Invited talk, Fall meeting of the APS division of nuclear physics
- 2015 **“Structure and dynamics of neutron-rich matter on Earth and in the stars”**
Physics colloquium, Texas A&M University
- 2015 **“Frontiers at the interface of astrophysics and microscopic nuclear dynamics”**
Lab colloquium, TRIUMF
- 2014 **“Unraveling the mystery of the carbon-14 lifetime”**
Physics colloquium, University of Idaho

Conference presentations (27)

- 2016 **“Nuclear equation of state from chiral effective field theory”**
INT workshop: The phases of dense matter
- 2016 **“Microscopic optical potentials in neutron-rich matter from chiral EFT”**
Towards consistent approaches for nuclear structure and reactions, ECT* workshop
- 2016 **“Equation of state and pairing properties of neutron matter from chiral EFT”**
Pairing phenomena from neutron stars to cold gases, Physics by the Falls
- 2015 **“Equation of state and neutrino response from chiral effective field theory”**
Challenges of modeling supernovae from nuclear data, Numazu workshop
- 2015 **“Nuclear thermodynamics from chiral effective field theory”**
Radius 2015, McGill University
- 2015 **“Equation of state and neutrino response from chiral effective field theory”**
Fifty-One Ergs workshop, North Carolina State University
- 2015 **“Microscopic nucleon-nucleus optical potentials for neutron-rich systems”**
INT workshop: Reactions and structure of exotic nuclei
- 2014 **“Charged-current reactions in the supernova neutrinosphere”**
Fourth joint meeting of the nuclear physics divisions of the APS and JPS

- 2014 **“Microscopic nucleon-nucleus optical potential for neutron-rich systems”**
The r-process: status and challenges, INT Seattle workshop
- 2014 **“Nuclear thermodynamics from chiral low-momentum interactions”**
15th Annual meeting of the Northwest Section of the APS
- 2014 **“Auxiliary-field QMC simulations of neutron matter in chiral EFT”**
APS April meeting
- 2014 **“Nuclear few- and many-body systems in a DVR basis”**
Universality in few-body systems, theoretical challenges and new directions, INT Seattle program
- 2014 **“Nuclear few- and many-body systems in a DVR basis”**
Halo physics at the neutron drip line, EMMI/GSI workshop
- 2013 **“Microscopic optical potential from chiral two and three-nucleon forces”**
From few-nucleon forces to many-nucleon structure, ECT* workshop
- 2012 **“Electroweak probes and the role of three-nucleon correlations”**
Electroweak properties of light nuclei, INT Seattle workshop
- 2012 **“In-medium effective interactions for nuclear structure”**
Facing up to contemporary challenges in light nuclei, Argonne National Lab workshop
- 2012 **“Quasiparticle interaction in nuclear and neutron matter”**
The extreme matter physics of nuclei, EMMI/GSI workshop
- 2012 **“Chiral Fermi liquid description of nuclear matter”**
Group report, Meeting of the German Physical Society, Mainz, Germany
- 2011 **“Chiral nuclear dynamics with three-body forces”**
From quarks and gluons to hadrons and nuclei, Erice, Sicily
- 2011 **“Quasiparticle interaction in nuclear matter with chiral three-nucleon forces”**
Three-nucleon forces in vacuum and in the medium, ECT*, Italy
- 2011 **“Nuclear energy density functional from realistic three-body chiral forces”**
Meeting of the German Physical Society, Münster, Germany
- 2011 **“Chiral nuclear dynamics and applications with three-nucleon forces”**
Workshop in nuclear physics, Schleching, Germany
- 2010 **“Density-dependent NN interaction from chiral effective field theory”**
Meeting of the German Physical Society, Bonn, Germany
- 2009 **“ ^{14}C dating beta decay with chiral effective field theory”**
European nuclear physics conference, Bochum, Germany
- 2007 **“ ^{14}C beta decay with Brown-Rho-scaled NN interactions”**
Nuclear many-body approaches for the 21st century, INT Seattle program
- 2007 **“Medium-modified nucleon-nucleon interactions”**
Berkeley school of collective dynamics, Lawrence Berkeley National Lab
- 2005 **“Fermi liquid theory and Kuo-Brown effective interactions”**
Second joint meeting of the nuclear physics divisions of the APS and JPS

Invited seminars (26)

- 2016 **“Hot and dense neutron-rich matter from chiral effective field theory”**
Nuclear physics seminar, Technical University of Munich
- 2016 **“Hot and dense neutron-rich matter in supernovae and neutron star mergers”**
Nuclear physics seminar, University of Manchester
- 2016 **“Hot and dense neutron-rich matter in supernovae and neutron star mergers”**
Nuclear physics seminar, University of York
- 2015 **“Nuclear microphysics of r-process nucleosynthesis”**
Cyclotron Institute seminar, Texas A&M University
- 2014 **“Frontiers at the interface of astrophysics and microscopic nuclear dynamics”**
NSCL seminar, Michigan State University
- 2014 **“Progress and challenges in the chiral EFT description of neutron-rich matter”**
Nuclear physics seminar, Technical University of Munich, Germany
- 2014 **“Progress and challenges in the chiral EFT description of neutron-rich matter”**
Nuclear theory seminar, ECT*, Italy
- 2014 **“Progress and challenges in the chiral EFT description of neutron-rich matter”**
Nuclear physics seminar, University of Surrey, UK
- 2013 **“The carbon-14 anomaly and nuclear many-body forces”**
Nuclear physics seminar, CEA-Saclay
- 2013 **“Nuclear structure and reactions from chiral effective field theory”**
Nuclear theory seminar, ECT*, Italy
- 2012 **“Chiral approach to nuclear many-body systems”**
Nuclear theory seminar, National Institute for Nuclear Theory (INFN), Naples, Italy
- 2012 **“Chiral nuclear dynamics with three-body forces”**
Nuclear theory seminar, Ohio University
- 2012 **“Chiral nuclear dynamics and applications with three-body forces”**
Nuclear theory seminar, University of Washington
- 2012 **“Chiral nuclear dynamics and applications with three-body forces”**
Nuclear theory seminar, TRIUMF laboratory
- 2011 **“Chiral approach to nuclear dynamics”**
HIC4FAIR colloquium, University of Giessen, Germany
- 2011 **“Nuclear structure with chiral two- and three-nucleon forces”**
Nuclear physics seminar, SUNY Stony Brook
- 2011 **“From ^{14}C dating to dense nuclear matter: three-nucleon forces at work”**
Nuclear physics seminar, Jefferson Lab
- 2011 **“Nuclear structure with realistic chiral two- and three-body interactions”**
Nuclear physics seminar, Michigan State University

- 2011 **“Chiral nuclear dynamics and applications with three-nucleon forces”**
Nuclear physics seminar, SUNY Stony Brook
- 2010 **“Chiral nuclear dynamics and applications with three-nucleon forces”**
Nuclear physics seminar, Technical University of Darmstadt, Germany
- 2009 **“Density-dependent NN interaction from chiral perturbation theory”**
Nuclear physics seminar, SUNY Stony Brook
- 2009 **“Carbon-14 dating beta decay and chiral effective field theory”**
Strong Interaction Seminar, Technical University of Munich, Germany
- 2008 **“In-medium nuclear interactions and the carbon-14 dating beta decay”**
Technical University of Munich, Germany
- 2007 **“Applications of medium-modified nuclear interactions”**
Rutgers University
- 2006 **“Fermi liquid theory with Brown-Rho-scaled nucleon-nucleon interactions”**
Pusan National University, South Korea
- 2006 **“Brown-Rho scaling with low momentum nucleon-nucleon interactions”**
Nagoya University, Japan