

CURRICULUM VITAE

University of Idaho

NAME: Sammarruca, Francesca

DATE: July 25, 2022

RANK OR TITLE: Professor

DEPARTMENT: Physics

OFFICE LOCATION AND CAMPUS ZIP: EP Building 329, 0903

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DATE OF FIRST TENURE-TRACK EMPLOYMENT AT UI: August 1997

DATE OF TENURE: August 2000

DATE OF PRESENT RANK OR TITLE: August 2007

FIELD OF RESEARCH: Theoretical Nuclear Physics

EDUCATION:

Ph.D., Physics, 1988, Virginia Polytechnic Institute, Blacksburg, Virginia

“*Laurea*” (approximately equivalent to M.S.) in Physics, 1980, University of Pavia, Italy

PROFESSIONAL EXPERIENCE:

Professional Experience:

Secretary of the University Faculty, since July 2019

Professor, Department of Physics, University of Idaho, 2007-present

Associate Professor, Department of Physics, University of Idaho, 2000-2007

Assistant Professor, Department of Physics, University of Idaho, Fall 1997-Spring 2000

Visiting Assistant Professor, Department of Physics, University of Idaho, Fall 1992-Spring 1997

Research Scientist and Affiliate Assistant Professor, Department of Physics, University of Idaho, 1989-92

Research Assistant, Department of Physics, Virginia Polytechnic Institute, 1985-88

Teaching Assistant, Department of Physics, Virginia Polytechnic Institute, 1981-83

Research Assistant, Laboratory for Applied Nuclear Energy (LENA), University of Pavia, Pavia, Italy, 1980-81

Teaching Experience at the University of Idaho:

Physics 465/565, Nuclear and Particle Physics, Fall 2015, Fall 2017; Fall 2019; Fall 2021;
approximate enrollment: 12-20

Physics 351, Introductory Quantum Mechanics, Spring 2016, Spring 2018; approximate enrollment:
10-12

Physics 230, Engineering Physics I, Fall 1992, Spring 1993, Fall 1993, Spring 1994, Fall 1994, Fall
1995, Spring 1996, Fall 1996, Spring 1997; approximate enrollment: 100

Physics 200, Physics Seminar, Fall 2008, enrollment: 18

Physics 315, Introduction to Modern Physics, Fall 1995, Fall 1996, Fall 1997, Fall 1998, Fall 1999,
Spring 2002; approximate enrollment: 20

Physics 321, Analytical Mechanics I, Fall 1989, Fall 1993, Fall 1994, Fall 1997, Fall 1998, Fall 1999, Fall 2000, Fall 2002, Fall 2003, Fall 2004, Fall 2005, Fall 2006; Fall 2009; Fall 2010; Fall 2011; approximate enrollment: 10-20
Physics 322, Analytical Mechanics II, Spring 1989, Spring 1990, Spring 1993, Spring 1995, Spring 1998, Spring 1999, Spring 2000, Spring 2001, Spring 2003, Spring 2004, Spring 2005; approximate enrollment: 5-15
Physics 352, Quantum Mechanics II, Fall 2001; approximate enrollment: 5-10
Physics 521, Advanced Mechanics, Spring 2007; Spring 2008; Spring 2009; Spring 2010; Spring 2011, Spring 2012; Spring 2013; Spring 2015; Spring 2017; Spring 2019; approximate enrollment: 5-15
Physics 571, Mathematical Methods of Physics, Fall 2007, Fall 2008, Fall 2012; Fall 2014, Fall 2016, Fall 2018; Fall 2020; approximate enrollment: 7-13
Physics 501, Graduate Seminar, Fall 2017, Spring 2018; Fall 2022; approximate enrollment: 25
Physics 371, Mathematical Methods of Physics, Fall 2013; enrollment: 24
Physics 211, Engineering Physics I, Spring 2014; enrollment: 131
CORS 221 (Integrated Science), Physics in Everyday Life, Fall 2010; enrollment: 35

Graduate Student Advising:

Major Professor:

Tomiwa Ajagbonna, Ph.D., in progress
Jake Hayden, Ph.D., in progress
Randy Millerson, Ph.D., December 2020
Larz White, Ph.D., (2014)
Boyu Chen, Thesis M.S., (2014)
Plamen Krastev, Ph.D., (2006)
Dolores Alonso, Ph.D., (2003)
Xiangbin Meng, Ph.D., (2000)

Co-Advised:

Pei Liu, M.S., Physics (2009)
Dongsheng Liu, Ph.D., Physics (1996)

Undergraduate research advisees:

Kaylee Maret (Spring 2020)
Lochlann Dunn (Spring 2019)
Alison LaDuke (Fall 2015-2017) (recipient of the Hill Undergraduate Research Fellowship)
Michael Powell (Spring 2014)
Clara Bowman (Fall 2014)
Clayton Carson (Spring 2013)
Christopher Light (Fall 2013-Spring 2014)

Ph.D./M.S. Committees:

Member, Ph.D. Committee for Sanjoy Saha (Summer 2022)
Member, Ph.D. Committee for Hamda Alanazi (Spring 2021)
Member, Ph.D. Committee for Robert Chancia (Summer 2019)
Member, Ph.D. Committee for Nagar Rajabi (Spring 2019)
Member, Ph.D. Committee for Yevgen Nosyk (Summer 2017)
Member, M.S. Committee for Philip Herd (Fall 2015)
Member, Ph.D. Committee for Ehab Marji (Spring 2013)
Member, Ph.D. Committee for Takashi Sasaki, Physics (April 2014)
Member, Ph.D. Committee for Jia Wan, Mathematics (November 2012)
Member, Ph.D. Committee for Leslie Kerby, Idaho Falls (Summer 2015)
Member, M.S. Committee for Nori Iwata (August 2010)
Member, Ph.D. Committee for Tran Dinh Luong, Mathematics (January 2009)

Member, Ph.D. Committee for Kuo-Hao Lee (March 2012)
Member, M.S. Committee for Shilpa Chava (Spring 2008)
Member, Ph.D. Committee for H. Shimoyama (May 2005)
Member, Ph.D. Committee for A. Abuzir (December 2006)
Member, Ph.D. Committee for Xihua Zhao, Chemistry (June 2004)
Member, Ph.D. Committee for Danhong Zhang, Mathematics (April 2004)
Member, M.S. Committee for Dongsheng Liu, EE Department (September 1997)
Member, Ph.D. Committee for Dongsheng Liu (Spring 1996)
Member, Ph.D. Committee for Ye Song (Spring 1996)

Additional Representative Committee Assignments:

Senior Leadership Council (formerly President's Cabinet), member (since Fall 2019)
University Multi-Campus Communication Committee, Chair (since July 2019)
Faculty Affairs Committee, member (since July 2019)
University Curriculum Committee, member (since July 2019)
Committee on Committees, member (since July 2019)
College of Science Diversity Committee (since Spring 2021)
Physics Department Graduate Admissions Committee (since Fall 2021)
University of Idaho Faculty Appeals Hearing Board, Advisor (since Fall 2019)
Physics Department Scholarship Committee (since Fall 2021)
Physics Chair Search Committee, member (Fall 2018-Spring 2019)
Physics Department Academic Standards Committee, Chair (on going)
University of Idaho Faculty Appeals Hearing Board, Chair (2016-2018)
University of Idaho Faculty Appeals Hearing Board, member (2015-2018)
College of Science Promotion and Tenure Committee, Chair (2017-2018)
College of Science Promotion and Tenure Committee, member (2015-2018)
College of Science Faculty Council, member (2012- 2015)
UI Women Leadership Conference 2012, Program Committee, Chair, January 2012-October 2012
STEM Presidential Scholarship Committee, member
College of Science Diversity Committee, Chair, 2004-05
Dean's Strategic Plans Advisory Committee, member, 2003-04
College of Letters and Science Diversity Task Force, Chair, 2000-01
Affirmative Action Committee, Chair, 1999-2000
Goldwater Scholarship Committee, member
Physics Chair Search Committee, Chair, 1998-99
Dean's Advisory Committee, member, 1997-99
Affirmative Action Committee, member, 1997-99
College of Letters and Science Curriculum Committee, 1996-97

Awards:

Virginia Wolf Outstanding Service Award, March 2010
University of Idaho Alumni 'Inspirational Mentor' Award, December 2001
Faculty Recognition Award for Teaching Excellence, Naval R.O.T.C., April 2000

Selected Editorial and Referee Services:

Refereed proposals for DOE and NSF, as well as for international science foundations
Referee for "*Physical Review and Physical Review Letters*"
Referee for "*Nuclear Physics A*"
Referee for "*European Physics Journal*"
Referee for "*Journal of Physics G*"
Referee for "*Physics Letters B*"
Associate Editor, *Frontiers in Physics (Nuclear Physics)*, March 2018 – June 2022.

Membership in Professional and Scholarly Organizations:

American Physical Society
Affiliate, Institute for Nuclear Theory, University of Washington, Seattle, Washington
FRIB (Facility for Rare Isotope Beams) Users' Organization
American Federation of Teachers

Selected Additional Service:

Member of National Science Foundation Panel (no details provided due to confidentiality rules)
Member, Maria Goeppert Mayer Award Selection Committee, a subcommittee of the Committee on the Status of Women in Physics of the American Physical Society
Chair of the Northwest Section of the American Physical Society, 2006-07
2006 Meeting of the Northwest Section of the American Physical Society, Program Chair
Chair-Elect of the Northwest Section of the American Physical Society, 2005-06
Vice-Chair of the Northwest Section of the American Physical Society, 2004-05
Faculty adviser for the local *Society of Physics Students* (2003-2013)

REFEREED/ADJUDICATED PUBLICATIONS:

- F. Sammarruca, "Neutron skin systematics from microscopic equations of state," *Phys. Rev. C* **104**, 064312 (2022).
- F. Sammarruca and Randy Millerson, "The equation of state of neutron-rich matter at fourth order of chiral effective field theory and the radius of a medium-mass neutron star," *Universe* **8**, 133 (2022), Special Issue on "Gravitational Waves as a New Probe for Astronomy and Fundamental Physics."
- F. Sammarruca and Randy Millerson, "Overview of symmetric nuclear matter properties from chiral interactions up to fourth order of the chiral expansion," *Phys. Rev. C* **104**, 064312 (2021).
- F. Sammarruca and Randy Millerson, "Analysis of the neutron matter equation of state and the symmetry energy to fourth order of chiral effective field theory," *Phys. Rev. C* **104**, 034308 (2021).
- F. Sammarruca, R. Machleidt, and R. Millerson, "Temperature effects on the neutron matter equation of state from chiral effective field theory," *Mod. Phys. Lett. A* **35**, 2050156 (2020).
- F. Sammarruca and R. Millerson, "Exploring the relationship between nuclear matter saturation and finite nuclei with chiral two- and three-nucleon forces," *Phys. Rev. C*, **102**, 034313 (2020).
- R. Machleidt and F. Sammarruca, "Can chiral EFT give us satisfaction?," *Eur. Phys. J. A* **56**, 95 (2020).
- F. Sammarruca and R. Millerson, "Nuclear Forces in the Medium: Insight From the Equation of State", *Front. Phys.* doi: 10.3389/fphy.2019.00213.
- R. Cruz-Torres *et al.*, "Comparing proton momentum distributions in A=2 and 3 nuclei via ^2H ^3H and ^3He (e,e'p) measurements", *Phys. Lett.* **B797**, 134890 (2019).
- L.E. Marcucci, F. Sammarruca, M. Viviani, and R. Machleidt, "Momentum distributions and short-range correlations in the deuteron and ^3He with modern chiral potentials", *Phys. Rev. C* **99**, 034003 (2019).
- F. Sammarruca and R. Millerson, "The radius of the canonical-mass neutron star and chiral effective field theory," *J. Phys. G.: Nucl. Part. Phys.* **46**, 024001 (2019).
- F. Sammarruca, "Proton skins, neutron skins, and proton radii of mirror nuclei", *Front. Phys.* 6:90 (2018).
- F. Sammarruca, "Chiral Effective Field Theory for Nucleonic Matter", refereed Conference Proceedings, 12th International Spring Seminar on Nuclear Structure, Sant'Angelo d'Ischia, May 15-19, 2017; *J. Phys.:*

Conf. Ser. **966**, 012004 (2018).

- F. Sammarruca, "The symmetry energy: Predictions and constraints", *Modern Physics Letters A* **32**, 1730027 (2017).
- F. Sammarruca, "Predictions for the symmetry energy and recent constraints from the ASY-EOS experiment at GSI," *Physical Review C* **95**, 044316 (2017).
- H. Muether, F. Sammarruca, and Z. Ma, "Relativistic Effects on Three-Nucleon Forces in Nuclear Matter and Nuclei," *International Journal of Modern Physics E*, **26**, 1730001 (2017).
- F. Sammarruca and Y. Nosyk, "Impact of the neutron matter equation of state on neutron skin and neutron drip lines in chiral effective field theory", *Physical review C* **94**, 044311 (2016).
- F. Sammarruca, "Investigations of constraints on three-neutron forces by empirical information on the neutron skin of ^{48}Ca and ^{208}Pb ", *Physical Review C* **94**, 054317 (2016).
- F. Sammarruca, L. Coraggio, J.W. Holt, N. Itaco, R. Machleidt, L.E. Marcucci, "How well does the chiral expansion converge in nuclear and neutron matter?," Proceedings of the 8th International Workshop on Chiral Dynamics, June 29-July 3, 2015, Pisa, Italy. Proceedings of Science, PoS(CD15)026.
- R. Machleidt and F. Sammarruca, "Chiral EFT based nuclear forces: achievements and challenges," *Phys. Scr.* **91**, 083007 (2016). (Focus Issue on Nuclear Structure: Celebrating the 1975 Nobel Prize.)
- F. Sammarruca, "Short-range correlations in the deuteron: chiral effective field theory, meson-exchange, and phenomenology", *Physical Review C* **92**, 044003 (2015).
- F. Sammarruca, L. Coraggio, J.W. Holt, N. Itaco, R. Machleidt, L.E. Marcucci, "Toward order-by-order calculations of the nuclear and neutron matter equations of state in chiral effective field theory", *Physical Review C* **91**, 054311 (2015).
- F. Sammarruca, R. Machleidt, and N. Kaiser, "Spin-polarized neutron-rich matter at different orders of chiral effective field theory", *Physical Review C* **92**, 054327 (2015).
- F. Sammarruca, "Uncertainty Analysis of ^{208}Pb Neutron Skin Predictions with Chiral Interactions", *Symmetry* **7**, 1646 (2015), Special Issue on "Symmetry in Hadrons and Nuclei".
- F. Sammarruca, L. Coraggio, J.W. Holt, N. Itaco, R. Machleidt, L.E. Marcucci, "How well does the chiral expansion converge in nuclear and neutron matter?," Proceedings of 8th International Workshop on Chiral Dynamics, June 29-July 3, 2015, Pisa, Italy. (Refereed conference proceedings.)
- 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, "Proceedings of ``Nucleus-Nucleus 2015", June 21-26, 2015, University of Catania, Italy. (Refereed conference proceedings).
- F. Sammarruca, "Short-range correlations in isospin-symmetric and asymmetric nuclear matter: a microscopic perspective," *Physical Review C* **90**, 064312 (2014).
- L. White and F. Sammarruca, "In-medium nucleon-nucleon cross sections with non-spherical Pauli blocking," *Physical Review C* **90**, 044607 (2014).
- F. Sammarruca, "Recent advances in microscopic approaches to nuclear matter and symmetry energy," *Symmetry* **6**, 851 (2014).
- L. Coraggio, J.W. Holt, N. Itaco, R. Machleidt, L.E. Marcucci, and F. Sammarruca, "Nuclear matter equation of state with consistent two- and three-body perturbative interactions," *Physical Review C* **89**, 044321

(2014).

- F. Sammarruca, “The isospin dependence of the nuclear force and its impact on the many-body system,” refereed conference proceedings, Proceedings of the 11th International Spring Seminar on Nuclear Theory, Ischia, Italy, May 12-16, 2014; *Journal of Physics: Conference Series (IOP)*; in press.
- L. White and F. Sammarruca, “Solution of the Bethe–Goldstone equation without partial wave decomposition,” *Physical Review C* **88**, 054619 (2013).
- F. Sammarruca, “Microscopic approach to the nucleon-nucleon effective interaction and nucleon-nucleon scattering in symmetric and isospin-asymmetric nuclear matter,” *European Physics Journal A* **50**, 22 (2014).
- B. Chen, F. Sammarruca, and C.A. Bertulani, “Microscopic in-medium nucleon-nucleon cross sections with improved Pauli blocking effects”, *Physical Review C* **87**, 054616 (2013).
- F. Sammarruca, “Analysis of the symmetry energy in a microscopic approach,” *International Journal of Modern Physics E* **22**, 1330031 (2013).
- L. Coraggio, J.W. Holt, N. Itaco, R. Machleidt, and F. Sammarruca, “Reduced regulator dependence of neutron-Matter predictions with perturbative chiral interactions,” *Physical Review C* **87**, 014322 (2013).
- F. Sammarruca, L. White, and B. Chen, “The impact of charge-symmetry breaking and charge-independence breaking on the properties of neutrons and protons in isospin-asymmetric nuclear matter,” *European Physics Journal A* **48**, 181 (2012).
- F. Sammarruca, B. Chen, L. Coraggio, N. Itaco, and R. Machleidt, “Dirac-Brueckner-Hartree-Fock versus chiral effective field theory,” *Physical Review C* **86**, 054317 (2012).
- M.B. Tsang, J.R. Stone, F. Camera, P. Danielewicz, S. Gandolfi, K. Hebeler, C.J. Horowitz, J. Lee, W.G. Lynch, Z. Kohley, R. Lemmon, P. Moller, T. Murakami, S. Riordan, X. Roca-Maza, F. Sammarruca, A.W. Steiner, I. Vidana, and S.J. Yennello, “Constraints on the symmetry energy and neutron skins from experiments and theory,” *Physical Review C* **86**, 015803 (2012).
- F. Sammarruca, “A microscopic Equation of State for Neutron-Rich Matter and its effect on Neutron Star Properties,” in “Astrophysics,” edited by Ibrahim Kucuk (InTech, Rijeka, Croatia, 2012) Ch.9, p.179.
- F. Sammarruca, “Contribution of isovector mesons to the symmetry energy in a microscopic model,” *Physical Review C* **84**, 044307 (2011).
- F. Sammarruca and L. White, “Probing the sensitivity of the total nucleus-nucleus reaction cross section at intermediate energies to medium effects and isospin asymmetries,” *Physical Review C* **83**, 064602 (2011).
- F. Sammarruca, “Spin- and isospin-polarized states of nuclear matter in the Dirac-Brueckner-Hartree-Fock model,” *Physical Review C* **83**, 064304 (2011).
- F. Sammarruca, “From neutron skins to neutron stars with a microscopic equation of state,” refereed contribution to the 10th International Spring Seminar on Nuclear Physics: New Quests in Nuclear Structure; Vietri sul Mare, Italy, May 21-25, 2010; *Journal of Physics: Conference Series*, A. Covello and A. Gargano eds., **267**, 012018 (2011).
- F. Sammarruca, “The splitting of the one-body potential in spin-polarized isospin-symmetric nuclear matter,” *Physical Review C* **82**, 027307 (2010).
- F. Sammarruca, “Temperature dependence of single-particle properties in isospin-symmetric and -asymmetric nuclear matter in the Dirac-Brueckner-Hartree-Fock model,” *Journal of Physics G*, **37**, 085105 (2010).

- F. Sammarruca, "The Microscopic Approach to Nuclear Matter and Neutron Star Matter," review article, *International Journal of Physics E* **19**, 1259 (2010).
- F. Sammarruca, "Effect of Lambda hyperons on the nuclear equation of state in a Dirac-Brueckner-Hartree-Fock model," *Physical Review C* **79**, 034301 (2009).
- F. Sammarruca and Pei Liu, "The neutron skin of 208-Pb and the density dependence of the symmetry energy," *Physical Review C* **79**, 057301 (2009).
- F. Sammarruca, "The mean free path of protons and neutrons in isospin-asymmetric nuclear matter," *Physical Review C* **77**, 047301 (2008).
- H.F. Zhang, Z.H. Liu, U. Lombardo, P.Y. Luo, F. Sammarruca, and W. Zuo, "Nucleon-nucleon cross sections in dense nuclear matter," *Physical Review C* **76**, 054001 (2007).
- F. Sammarruca and P.G. Krastev, "Spin polarized neutron matter within the Dirac-Brueckner-Hartree-Fock approach," *Physical Review C* **75**, 034315 (2007).
- D.S. Sorensen, J.L. Ullmann, A. Ling, B.K. Park, R.C. Haight, N.S.P. King, R.A. Lindgren, H. Baghaei, E.J. Stephenson, F.P. Brady, J.L. Romero, J. Rapaport, B.L. Clausen, C. West, F. Sammarruca, "Limitations of the distorted-wave impulse approximation in describing the energy-dependence of the $^{10}\text{B}(n, p)^{10}\text{Be}(g.s.)$ reaction," *Physical Review C* **75**, 034611 (2007).
- P.G. Krastev and F. Sammarruca, "Neutron star properties and the equation of state of neutron-rich matter," *Physical Review C* **74**, 025808 (2006).
- F. Sammarruca and P. Krastev, "Effective nucleon-nucleon cross sections in symmetric and asymmetric nuclear matter," *Physical Review C* **73**, 014001 (2006).
- F. Sammarruca, W. Barredo, and P. Krastev, "Predicting the single-proton/neutron potentials in asymmetric nuclear matter," *Physical Review C* **71**, 064306 (2005).
- E. Stephenson, R. Johnson, and F. Sammarruca, "Inclusion of non-spherical components of the Pauli blocking operator in (p,p') reactions," *Physical Review C* **71**, 014612 (2005).
- D. Alonso and F. Sammarruca, "Microscopic calculations in asymmetric nuclear matter," *Physical Review C* **67**, 054301 (2003).
- D. Alonso and F. Sammarruca, "Neutron densities and the equation of state for neutron-rich matter," *Physical Review C* **68**, 054305 (2003).
- F. Sammarruca, D. Alonso, and E.J. Stephenson, "Comparison between chiral and meson-theoretic nucleon-nucleon potentials through (p,p') reactions," *Physical Review C* **65**, 047601 (2002).
- X. Wang, J. Rapaport, M. Palarczyk, C. Hautala, X. Yang, D.L. Prout, B. Anderson, A.R. Baldwin, J. Olmsted, J.W. Watson, W.-M. Zhang, I. Van Heerden, E.J. Stephenson, R. Howes, S. Parks, E. Sugarbaker, B.A. Brown, F. Sammarruca, "Polarization transfer measurements for the $^{13}\text{C}(p,n)^{13}\text{N}$ reaction at 197 MeV and empirical isovector spin-longitudinal response for the $(\frac{1}{2})_{g.s.} \rightarrow (\frac{1}{2})_1^+$ transition," *Physical Review C* **66**, 014606 (2002).
- F. Sammarruca and E.J. Stephenson, "Δ-isobars and (p,p') reactions," *Physical Review C* **64**, 034006 (2001).
- F. Sammarruca, X. Meng, and E.J. Stephenson, "Exact treatment of the Pauli exclusion operator in nuclear matter," *Physical Review C* **62**, 014614 (2000).
- F. Sammarruca, H. Witala, and X. Meng, "Modifications of meson masses and the three-nucleon problem," *Acta Physica Polonica B* **31**, 2039 (2000).

- F. Sammarruca, E.J. Stephenson, K. Jiang, J. Liu, C. Olmer, A.K. Opper, S.W. Wissink, "Testing microscopic medium effects on nucleons and mesons using polarization observable in high-spin, unnatural-parity (p,p') at 200 MeV," *Physical Review C* **61**, 014309 (2000).
- F. Sammarruca, E.J. Stephenson and K. Jiang, "Microscopic calculations of medium effects for 200-MeV (p,p') reactions," *Physical Review C* **60**, 064610 (1999).
- F. Sammarruca and E.J. Stephenson, "A Framework for Using (p,p') Reactions to Characterize New Medium Modifications to the Nucleon-Nucleon Interaction," *Physical Review C* **58**, 307 (1998).
- F. Sammarruca and R. Machleidt, "Triton Binding Energy and Minimal Relativity," *Few-Body Systems* **24**, 87 (1998).
- P. Deutchman and F. Sammarruca, "Effects of ρ -Exchange in Coherent Pion Production," *Physical Review C* **57**, 196 (1998).
- F. Sammarruca, "On the Role of the 3F_3 Partial Wave in Elastic and Inelastic Nucleon-Nucleon Scattering at 800 MeV," *Canadian Journal of Physics* **75**, 493 (1997).
- R. Machleidt and F. Sammarruca, and Y. Song, "The Non-Local Nature of the Nuclear Force and Its Impact on Nuclear Structure," *Physical Review C* **53**, 1483 (1996).
- R. Machleidt, F. Sammarruca, and Y. Song, "Off-Shell NN Potential and Nuclear Binding," *Few-Body Systems Suppl.* **9**, 410 (1995).
- F. Sammarruca, "Polarization in the $pp \rightarrow n\Delta^{++}$ Above 1 GeV," *Physical Review C* **51**, 2823 (1995).
- F. Sammarruca, "The Reaction $pp \rightarrow n\Delta^{++}$: Observables and Model Predictions," *Physical Review C* **50**, 652 (1994).
- F. Sammarruca, Dapeng Xu, and R. Machleidt, "Relativistic Corrections to the Triton Binding Energy," *Physical Review C* **46**, 1636 (1992).
- R. Machleidt and F. Sammarruca, "Recent Determinations of the πNN Coupling Constant and Deuteron Properties," *Physical Review Letters* **66**, 564 (1991).
- F. Sammarruca and T. Mizutani, "Single Pion Production in Nucleon-Nucleon Collisions," *Physical Review C* **41**, 2286 (1990).

SELECTED PAPERS, INVITED OR CONTRIBUTED, PRESENTED AT SCHOLARLY MEETINGS

- F. Sammarruca, "The equation of state of neutron-rich matter at fourth order of chiral effective field theory and the radius of a medium-mass neutron star," invited talk (virtual) given at the 39th International Workshop on Nuclear Theory, Rila Mountain, Bulgaria, July 4-8, 2022.
- F. Sammarruca, "Neutron stars: The most bizarre laboratory for nuclear physics," invited talk (virtual) at the 2022 North American Einstein Toolkit Summer School, University of Idaho, Moscow, Idaho, June 13-17, 2022.
- F. Sammarruca, "Nuclear forces in the medium: Insight from the equation of state," Theory Seminar at NSCL/FRIB, April 20, 2021.
- F. Sammarruca, "Exploring the relationship between nuclear matter saturation and finite nuclei with chiral two- and three-nucleon forces," Fall Meeting of the Division of Nuclear Physics of the American Physical Society, October 29 – November 1, 2020 – contributed paper presented at the virtual meeting.
- F. Sammarruca, "Theoretical Studies of Short-Range Correlations in Nuclei and Nuclear Matter",

invited talk given at Lepton Interactions with Nucleons and Nuclei (ELBA XV), Marciana Marina, Isola d'Elba, Italy, June 23-28, 2019.

- F. Sammarruca, L.E. Marcucci, Michele Viviani, and R. Machleidt, "Short-Range Correlations in Nuclei and Nuclear Matter", contribution presented at the APS April Meeting 2019, Mini-Symposium "Short Range Nuclear Structure I", Denver, Colorado, April 13-16, 2019.
- R. Millerson and F. Sammarruca, "Predictions of the canonical-mass neutron star radius based on chiral Effective field theory", contribution presented at the 20th Meeting of the APS Northwest Section, May 16-18, 2019, Western Washington University, Bellingham, Washington.
- L.E. Marcucci, F. Sammarruca, M. Viviani, and R. Machleidt, "Momentum Distributions in ^3He with Chiral Potentials", Recent Progress in Few-Body Physics: Proceedings of the 22nd International Conference on Few-Body Problems in Physics (Springer, 2020). Chapter doi: 10.1007/978-3-030-32357-8_71.
- F. Sammarruca, "From nuclei to neutron stars with a consistent approach", invited talk, 10th International Conference on Direct Nuclear Reactions with Exotic Beams, June 4-8, 2018, Matsue, Japan.
- F. Sammarruca, "From nuclei to neutron stars with a consistent approach", invited talk, 37th International Workshop on Nuclear Theory, Rila Mountains, Bulgaria, June 24-30, 2018; "Nuclear Theory" **37** (2018), eds. M. Gaidarov, N. Minkov, Heron Press, Sofia (with co-author R. Millerson).
- F. Sammarruca, "Chiral Effective Field Theory and Nucleonic Matter", invited talk, 36th International Workshop on Nuclear Theory, Rila Mountains, Bulgaria, June 25-July 1, 2017; "Nuclear Theory" **36** (2017), eds. M. Gaidarov, N. Minkov, Heron Press, Sofia.
- F. Sammarruca, "Correlations in nuclear matter and nuclei", invited talk, International Conference on Nuclear Theory in the Supercomputing Era-2018, Daejeon, Korea, October 29-November 2, 2018.
- F. Sammarruca, "Correlations in nuclear matter and nuclei", invited presentation at the Mini-Symposium on "Overview of Two- and Three-Nucleon Correlations in Nuclei", Fifth Joint Meeting of the American Physical Society and the Physical Society of Japan", October 23-27, 2018, Big Island, Hawaii.
- F. Sammarruca, "Applications of modern chiral interactions in neutron-rich matter", invited talk, Transport 2017, International Collaborations in Nuclear Theory (ICNT), FRIB-MSU, March 22-April 12, 2017.
- F. Sammarruca, "Chiral Effective Field Theory of Nucleonic Matter", invited talk, 12th International Spring Seminar on Nuclear Structure, Sant'Angelo d'Ischia, May 15-19, 2017.
- F. Sammarruca, "Chiral effective field theory of nucleonic matter", contribution presented at the APS Northwest Meeting, Forest Grove, Oregon, June 1-3, 2017.
- F. Sammarruca, "Ab initio predictions of the symmetry energy and recent constraints", April Meeting 2017, American Physical Society, Washington, DC, January 28-31, 2017.
- F. Sammarruca, "Microscopic investigations of neutron skins and neutron separation energies with state-of-the-art chiral forces," invited talk given at the CUSTIPEN-IMP-PKU Workshop on Physics of Exotic Nuclei", Huizhou, China, December 12-15, 2016.
- F. Sammarruca, "Uncertainty quantification in many-body applications of chiral nuclear forces," invited talk, The 23rd European Conference on Few-Body Problems in Physics, Aarhus, Denmark, August 8-12, 2016.
- F. Sammarruca, "Recent Advances in microscopic approaches to neutron-rich matter," talk given at the 2016 Annual Meeting of the Northwest Section of the American Physical Society, May 12-14, 2016, Okanagan College, Penticton, Canada.

- F. Sammarruca, "How well does the chiral expansion converge in nuclear and neutron matter?", invited talk, 8th International Workshop on Chiral Dynamics, June 29-July 3, 2015, Pisa, Italy.
- F. Sammarruca, "Systematic uncertainty quantification of nucleonic matter predictions", invited talk, CUSTIPEN Workshop on "Advances in the computations of nuclear structure and nucleon-nucleon force", Peking University, August 1-6, 2015;
- F. Sammarruca, "The symmetry energy: yesterday, today, tomorrow", CUSTIPEN Workshop on "Properties of exotic nuclei and asymmetric nuclear matter", invited talk, Institute of Modern Physics, Lanzhou, China, August 7-12, 2015.
- F. Sammarruca, "From nuclear matter to nuclear reactions," invited talk, Peking University, China-U.S. Theory Institute for Physics with Exotic Nuclei (CUSTIPEN) workshop, Beijing, August 10-14, 2014.
- F. Sammarruca, "The isospin dependence of the nuclear force and its impact on the many-body system," invited talk, 11th International Spring Seminar on Nuclear Theory, Ischia, Italy, May 12-16, 2014.
- F. Sammarruca, "Order-by-order predictions for nuclear and neutron matter," HAW14 Meeting of the American Physical Society, Hawaii's Big Island, October 7-11, 2014.
- F. Sammarruca, "A comparison between different microscopic approaches to neutron-rich matter," invited Talk, European Center for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy, June 10-14, 2013.
- F. Sammarruca, "Microscopic approaches to isospin-asymmetric matter," invited talk, Japan-U.S. Theory Institute for Physics with Exotic Nuclei (JUSTIPEN) workshop, Wako-shi, Japan, December 9-12, 2013.
- F. Sammarruca, "Comparing different microscopic approaches to neutron-rich matter," invited talk, Third International Symposium on Symmetry Energy, National Superconducting Cyclotron Laboratory, East Lansing, Michigan, July 22-26, 2013.
- F. Sammarruca, "Improving our understanding of the symmetry energy," invited talk, Proceedings of the 31st International Workshop on Nuclear Theory, June 25-29, 2012, Rila Mountains, Bulgaria; "Nuclear Theory," **31** (2012), eds. A. Georgieva, N. Minkov, Heron Press, Sofia.
- F. Sammarruca, "Contribution of isovector mesons to the symmetry energy in a microscopic model," contribution to the 2012 April Meeting of the American Physical Society, Atlanta, Georgia, March 31-April 3, 2012.
- F. Sammarruca and L. White, "The nucleus-nucleus reaction cross section at intermediate energy as a mean to constrain nuclear properties," contribution to the April Meeting of the American Physical Society, April 30-May 3, 2011, Anaheim, California.
- F. Sammarruca, "From neutron skins to neutron stars to nuclear reactions with a self-consistent and microscopic approach," talk delivered at the International Symposium on Nuclear Symmetry Energy, Smith College, June 17-20, 2011.
- F. Sammarruca and L. White, "Constraining in-medium nucleon-nucleon interactions via nucleus-nucleus reactions," contribution to the Fall Meeting of the Division of Nuclear Physics of the American physical Society, Santa Fe, New Mexico, November 2-6, 2010.
- F. Sammarruca, "From nuclei to neutron stars with a consistent approach," talk delivered at the Panamerican Advanced Study Institute, Joao Pessoa, Brazil, August 1-13, 2010.
- F. Sammarruca, "From neutron skins to neutron stars with a microscopic equation of state," invited talk; Proceedings of the 10th Spring Seminar on Nuclear Physics, May 21-25, 2010, Vietri, Italy.

- F. Sammarruca, "The *ab initio* approach to nuclear matter and its extreme states," invited talk; Proceedings of the International Workshop on Nuclear Dynamics in Heavy Ion Reactions and the Symmetry energy, August 22-25, 2009, Shanghai, China.
- F. Sammarruca, "Recent Progress with *ab initio* calculations of nuclear matter," invited talk; Proceedings of the 28th International Workshop on Nuclear Theory, June 21-27, 2009, Rila Mountains, Bulgaria.
- F. Sammarruca, "On our recent progress with microscopic calculations of nuclear matter," contribution to the Third Joint Meeting of the Division of Nuclear Physics of the American Physical Society and the Physics Society of Japan, October 13-17, 2009, Waikoloa, Hawaii.
- F. Sammarruca, "Current status of our microscopic predictions of the equation of state," contribution to the 2008 Fall Meeting of the Division of Nuclear Physics of the American Physical Society, October 23-26, 2008, Oakland, California.
- F. Sammarruca, "Taking a broad look at the nuclear equation of state," invited talk given at the 2008 Annual Meeting of the Northwest Section of the American Physical Society, May 16-17, 2008, Lewis and Clark College, Portland, Oregon.
- F. Sammarruca, "Recent progress with *ab initio* calculations of the nuclear equation of state," contribution to the 2007 Annual Fall Meeting of the Division of Nuclear Physics of the American Physical Society, October 10-13, 2007, Newport News, Virginia.
- F. Sammarruca, "In-medium hadronic interactions and the nuclear equation of state," invited talk given at the International Symposium on Exotic States of Nuclear Matter," Catania, Italy, June 11-15, 2007; Proceedings of the International Symposium on Exotic States of Nuclear Matter, edited by Umberto Lombardo *et al.*, (World Scientific, Singapore, 2008), p.11.
- P.G. Krastev, F. Sammarruca, Bao-An Li, and A. Worley, "Effective interactions in neutron-rich matter," Proceedings of the XXVI International Workshop on Nuclear Theory, June 25-30, 2007, Rila Mountains, Bulgaria.
- F. Sammarruca, "What can we learn from microscopic studies of dense nuclear matter?," contribution to the 2007 Annual Meeting of the Northwest Section of the American Physical Society, May 17-19, Idaho State University, Pocatello, Idaho.
- F. Sammarruca and P. Krastev, "The equation of state for spin-polarized cold nuclear matter," Contribution to the April Meeting of the American Physical Society, April 14-17, 2007, Jacksonville, Florida.
- P. Krastev, Bao-An Li, and F. Sammarruca, "Constraining possible time variations of the gravitational constant through terrestrial nuclear laboratory data," Contribution to the April Meeting of the American Physical Society, April 14-17, 2007, Jacksonville, Florida.
- P. Krastev and F. Sammarruca, "The nuclear equation of state and its applications to neutron stars," contribution to the April Meeting of the American Physical Society, April 22-25, 2006, Dallas, Texas.
- P. Krastev and F. Sammarruca, "The nuclear equation of state and its applications to neutron stars," contribution to the 8th Annual Meeting of the APS Northwest Section, May 19-20, 2006, University of Puget Sound, Tacoma, Washington.
- F. Sammarruca, "The nuclear equation of state: a tool to constrain in-medium hadronic interactions," invited talk given at the XXV International Workshop on Nuclear Theory, June 26-July 1, 2006, Rila Mountains, Bulgaria.
- P. Krastev and F. Sammarruca, "Understanding in-medium hadronic interactions through the nuclear equation of state," contribution to the Annual Meeting of the Division of Nuclear Physics of the American Physical Society, October 25-28, 2006, Nashville, TN.

- F. Sammarruca and P. Krastev, "Microscopic approach to isospin-asymmetric nuclear matter: recent progress and applications," contribution to the Second Joint Meeting of the APS and JPS, September 18-22, 2005, Kapalua, Hawaii. Bulletin of the APS, Vol. 50, No. 6.
- F. Sammarruca, P. Krastev, and W. Barredo, "Microscopic calculations in isospin-asymmetric nuclear matter," contribution to the 7th Annual Meeting of the APS Northwest Section, May 13-14, 2005, University of Victoria, Victoria, B.C., Canada.
- F. Sammarruca, P. Krastev, and W. Barredo, "Effective interactions in neutron-rich matter," invited talk given at the 2nd RIA Workshop on *Reaction Mechanisms for Rare Isotope Beams*, March 9-12, 2005, East Lansing, Michigan. (B. Alex Brown ed.)
- F. Sammarruca, "Effects of the asymmetry in neutron/proton ratio on nucleon-nucleon scattering," contribution to the Spring Meeting of the American Physical Society, May 1-4, 2004, Denver, Colorado.
- F. Sammarruca, "Asymmetry in neutron and proton densities and its impact on hadron dynamics," contribution to the 6th meeting of the Northwest Section of the American Physical Society, May 21-22, 2004, University of Idaho and Washington State University.
- F. Sammarruca, W. Barredo, and P. Krastev, "Constraining the energy dependence of the symmetry potential," contribution to the Fall meeting of the Division of Nuclear Physics of the American Physical Society, October 27-30, 2004, Chicago, Illinois.
- F. Sammarruca, "Microscopic studies in neutron-rich matter," invited talk given at the 22nd International Workshop on Nuclear Theory, June 16-22, 2003, Rila Mountains, Bulgaria; published in *Nuclear Theory '22*, ed. V. Nikolaef, Heron Press, Sofia, 2003.
- F. Sammarruca, "Proton-nucleus scattering: a tool to explore nuclear matter," invited talk given at the Northwest Section Meeting of the American Physical Society, Banff, Alberta, Canada, May 17-18, 2002.

OTHER SCHOLARLY PUBLICATIONS:

Co-author of the *Dictionary of Material Science & High Energy Physics*, CRC Press, 2001.

ADDITIONAL SELECTED TALKS AND COLLOQUIA:

- "Gender Equity and Science: Institutional and Cultural Issues," invited colloquium at KSU – Marietta Campus, April 23, 2021.
- "Gender Equity and Science: Cultural and Institutional Issues," UI Physics Department Colloquium, March 2019.
- "Nuclear Science: fundamental knowledge and broader impact," UI Physics Department Colloquium, November 30, 2015.
- "Gender Equity and Science: Institutional and Cultural Issues," University of Idaho Interdisciplinary Colloquium, January 21, 2014.
- "The Nucleus: Getting to the Earth of the Matter," UI Physics Department Colloquium, March 10, 2014.
- "Microscopic calculations of neutron-rich matter," Nuclear Theory Seminar, University of Naples, Italy, July 2, 2012.
- "From neutron skins to nuclear reactions (and beyond..) with a consistent microscopic approach," Colloquium given at Washington State University, October 18, 2011.
- "The nucleus: Getting to the hearth of the matter," invited talk given at the Zone 17 Meeting of the Society of

Physics Students (SPS), Wild Horse wind farm, Vantage, Washington, April 16, 2011.

“A broad view of the nuclear equation of state of asymmetric nuclear matter,” invited talk at the Gordon Conference in Nuclear Chemistry, Colby-Sawyer College, New London (NH), June 15-20 (2008).

“In-medium hadronic interactions and the nuclear equation of state,” invited seminar given at the National Superconducting Cyclotron Laboratory, Michigan State University, March 26, 2008.

“Microscopic studies in neutron-rich matter,” invited nuclear theory seminar given at the Indiana University Cyclotron Facility (IUCF), July 23, 2003.

“The nucleus: getting to the heart of the matter,” colloquium given at Idaho State University, February 3, 2003.

“The heart of nuclear physics,” invited talk given at the Annual Meeting of the Northwest Mining Association, December 5, 2002.

“The Nucleus: getting to the heart of the matter,” colloquium given at Central Washington University, October 17, 2002.

“Studies of the effective interaction in nuclear matter and nuclei,” colloquium given at Washington State University, February 5, 2002.

GRANTS AND CONTRACTS:

“Nuclear Theory at the University of Idaho,” \$240,000, funded by the U.S. Department of Energy for the period of 12/01/21 to 11/30/23; PI: F. Sammarruca, Co-PI: R. Machleidt.

“Nuclear Theory at the University of Idaho,” \$339,000, funded by the U.S. Department of Energy for the period of 08/01/18 to 11/30/21; PI: F. Sammarruca, Co-PI: R. Machleidt.

“Nuclear Theory at the University of Idaho,” \$315,000, funded by the U.S. Department of Energy for the period of 08/01/15 to 07/31/18; PI: F. Sammarruca, Co-PI: R. Machleidt.

“Nuclear Theory at the University of Idaho,” \$285,000, funded by the U.S. Department of Energy for the period of 08/01/12 to 07/31/15; PI: F. Sammarruca, Co-PI: R. Machleidt.

“Nuclear Theory at the University of Idaho,” \$230,000, funded by the U.S. Department of Energy for the period of 08/01/09 to 07/31/12; PI: F. Sammarruca, Co-PI: R. Machleidt.

“The nuclear equation of state: a broad view from terrestrial and astrophysical systems,” \$133,000, funded by the U.S. Department of Energy for the period of 9/1/06-7/31/09. P.I.: F. Sammarruca.

“Microscopic studies with asymmetric nuclear matter and asymmetric nuclei,” \$125,000, funded by the U.S. Department of Energy for the period of 9/1/03-8/31/06. P.I.: F. Sammarruca.

Participant in the “Research Experience for Undergraduates” proposal, funded by the NSF, \$125,000, January 2002-December 2004.

“Exploring medium effects on the nuclear force,” \$107,000, funded by DOE, 9/1/00-8/31/03. P.I.: F. Sammarruca.

“The Nuclear Force in the Nuclear Medium,” \$4,745, proposal funded by the University of Idaho Research Council, June 1998-June 1999 (FY1999 Seed Grant Program). P.I.: F. Sammarruca.

Research Planning Grant, “Pion Production in Peripheral Heavy Ion Collisions,” \$12,000, NSF, July 1989-July 1990. P.I.: F. Sammarruca.

