Rebecca A. Surman

Department of Physics and Astronomy
University of Notre Dame
Notre Dame, IN, USA 46556

phone 574.631.6590
fax 574.631.5952
email rsurman@nd.edu

Education

Ph.D. Department of Physics and Astronomy, University of North Carolina at Chapel Hill, 1998
Thesis: Freezeout and Neutrinos in r-Process Nucleosynthesis
Advisor: Jonathan Engel
M.S. Department of Physics and Astronomy, Michigan State University, 1995
B.A. *Summa Cum Laude* in Physics, State University of New York College at Geneseo, 1993

Experience

Professor, University of Notre Dame, 2018-
Associate Professor, University of Notre Dame, 2014-2018
Professor, Union College, 2011-2014
Visiting Associate Professor, University of Notre Dame, 2011-2013
Associate Professor, Union College, 2005-2011
Visiting Assistant Professor, North Carolina State University, 2002-2003, 2008
Assistant Professor, Union College, 2000-2005
Visiting Assistant Professor, Union College, 1998-2000

Fellowships and Awards

Fellow, American Association for the Advancement of Science, 2022
Fellow, American Physical Society, 2016
Stillman Prize for Excellence in Teaching, Union College campuswide teaching award, 2007
Physics Department Teaching Assistant Award, UNC-Chapel Hill, 1997
Outstanding Teaching Assistant, American Association of Physics Teachers, 1997
Board of Governors Fellowship for Science and Technology, UNC-Chapel Hill, 1995-1998
College of Natural Science Recruitment Fellowship, Michigan State University, 1993-1994
Barry Goldwater National Scholarship, 1991-1993

Professional Memberships

American Physical Society (Division of Nuclear Physics, Division of Astrophysics)
American Association for the Advancement of Science

Professional Service

APS Division of Astrophysics Chair line, 2022-2026
Co-Convener, NSAC Long Range Plan Town Hall Meeting for Nuclear Structure, Reactions, and Astrophysics, 2022-2023
American Physical Society Ethics Committee, 2022-2024
APS DNP Stuart Freedman Prize Selection Committee, Vice-Chair 2022, Chair 2023
APS DNP Dissertation Award Selection Committee 2022
APS CWSP Site Visit Panelist 2022
Institute of Nuclear Theory National Advisory Committee (INT NAC), 2021-2023

DOE/NSF Nuclear Science Advisory Committee (NSAC), 2019-2022
NSAC Committee of Visitors, 2019-2020
American Physical Society Division of Nuclear Physics Executive Committee, 2017-2019
  APS DNP Nominations Committee, Vice-Chair 2017-2018, Chair 2018-2019
  APS DNP Publications Committee, Vice-Chair 2017-2018, Chair 2018-2019
Executive Board, Facility for Rare Isotope Beams Theory Alliance, 2016-2019
  FRIB-TA Fellows Search Committee, 2017-2018
  FRIB-TA Bridge Committee, 2018-2019
American Physical Society Division of Nuclear Physics Program Committee, 2013-2015

Grants and Sponsored Programs

Active Contracts

"Nuclear Properties at Extreme Density, Temperature, Spin, and Isospin"
Department of Energy Office of Science
PI: Mark Caprio, University of Notre Dame
Co-PIs: G. Mathews, R. Surman
Budget: $1.0M, 2021-2024

"Evaluation of Gamma-ray Production"
Nuclear Data Interagency Working Group, Department of Energy
Lead PI: Toshihiko Kawano (LANL)
Institutional PIs: McLaughlin (NCSU), Schunck (LLNL), Surman (Notre Dame)
Total budget: $2.7M, 2021-2024
Notre Dame budget total: $300k

"Network for Neutrinos, Nuclear Astrophysics, and Symmetries (N3AS)"
National Science Foundation Physics Frontier Center
Lead PI: Wick Haxton (Berkeley)
17 co-PIs and Senior Investigators from 12 institutions, including Surman (Notre Dame)
Notre Dame budget total: one postdoc for two years

"Nuclear Physics of Multi-Messenger Mergers (NP3M)"
National Science Foundation Focused Research Hub
Lead PI: Andrew Steiner (Tennessee)
19 co-PIs and Senior Investigators from 14 institutions, including Surman (Notre Dame)
Notre Dame budget total: one postdoc for 1-2 years

Completed Contracts

"Towards Exascale Astrophysics of Mergers and Supernovae (TEAMS)"
Department of Energy Office of Science
Lead PI: W. Raphael Hix (ORNL)
Institutional PIs: Almgren (LBNL), Burrows (Princeton), Couch (MSU/FRIB), Dubey (ANL), Fryer (LANL), Fuller (UCSD), Kasen (Berkeley), Reddy (Washington), Surman (Notre Dame), Steiner (Tennessee), Zingale (Stony Brook)
Total budget: $7.25M, 2017-2022
Notre Dame budget total: $259k

"Fission In R-process Elements (FIRE)"
Department of Energy and the National Nuclear Security Agency
Lead PI: Nicolas Schunck (LLNL)
Institutional PIs: Sonzogni (BNL), Kawano (LANL), McLaughlin (NCSU), Surman (Notre Dame)
Total budget: $2.5M, 2016-2021
Notre Dame budget total: $544k

"Research Hub for Fundamental Symmetries, Neutrinos, and Applications to Nuclear Astrophysics: The Inner Space/Outer Space/Cyber Space Connections of Nuclear Physics (N3AS)"
National Science Foundation
Lead PI: Wick Haxton (Berkeley)
Institutional PIs: Gardner (Kentucky), Carlson (LANL), Qian (Minnesota), McLaughlin (NCSU), DeGouvea (Northwestern), Phillips (Ohio), Balantekin (Wisconsin), Surman (Notre Dame)
Total budget: $2.28M, 2016-2021
Notre Dame budget total: one postdoc for two years

"Nuclear Properties at Extreme Density, Temperature, Spin, and Isospin"
Department of Energy Office of Science
PI: Grant J. Mathews, University of Notre Dame
Co-Is: R. Surman, S. Frauendorf, M. Caprio
Budget: $1.03M, 2018-2021

"Neutrinos and Nucleosynthesis in Gamma-Ray Bursts", Single P.I. grant
Department of Energy Office of Science, 2005-2018, total $414k

Subcontract of the Outstanding Junior Investigator award of Katherine L. Grzywacz-Jones, "Spectroscopic Studies Close to ^{100}Sn and ^{132}Sn Using Direct Reactions and Gamma-Ray Measurements", 2009-2011, $50k

"Heavy element synthesis in outflows from gamma-ray burst accretion disks"
Research Corporation Cottrell College Science Award, 2004-2006, $21k

Student and Postdoctoral Supervision

Postdoctoral Researchers

Matthew Mumpower, 2012-2015, co-supervised with Ani Aprahamian
- Ph.D. 2012 North Carolina State University
- Staff Scientist, Los Alamos National Laboratory, 2017-present

Nicole Vassh, 2016-2021, FIRE postdoc
- Ph.D. 2016 University of Wisconsin
- Staff Scientist, TRIUMF, 2021-present

Xilu Wang, 2018-2021, N3AS Fellow
- Ph.D. 2018 University of Illinois
- Staff Scientist, IHEP Beijing, 2021-present

Mengke Li, 2023-2025, N3AS Fellow
Yukiya Saito, 2023-2025, NP3M Fellow

Graduate Students

Erika Holmbeck, Ph.D. 2020, co-supervised with Tim Beers
- APS Division of Nuclear Physics Dissertation Award 2021
- Hubble Fellow, Carnegie Observatory, 2021-2023
- Staff Scientist, Lawrence Livermore National Laboratory, 2023-

Trevor Sprouse, Ph.D. 2020
- Postdoc, Los Alamos National Laboratory, 2020-2023
- Scientist, AZIsotopes, 2023-

Lauren Harewood, 4th year
- GEM Fellowship 2023

Pranav Nalamwar, 3rd year
Jonathan Cabrera Garcia, 3rd year

Undergraduate Students

Andre Johnson, 2022 (University of Notre Dame)
Matteo Consentino, 2020
Andrew Toivonen, 2018-2020 (University of Minnesota)
David Shaw, Summer 2017 and academic year 2017-2018 (University of Notre Dame)
Lauren Ward, Fall 2016, 2018-2020 (University of North Carolina-Chapel Hill)
Zach Huber, Summer 2016 and academic year 2016-2017 (Cornell University)
Trevor Sprouse, 2013-2016 (Ph.D. 2020 University of Notre Dame)
Julie Cass, 2011-2012 (Ph.D. 2017 University of Washington)
Giusseppe Passucci, 2011-2012 (Ph.D. 2018 Syracuse University)

Courses Taught

University of Notre Dame

PHYS80701: Nuclear Physics
PHYS50701: Introduction to Nuclear Physics
PHYS24210: Physics for Life Sciences I
PHYS10411/22: Physics A/B
PHYS10320: General Physics II
PHYS10240: Elementary Cosmology

Union College

First-year Physics Seminar
Introduction to Astronomy
The Solar System and History of Astronomy
Introductory Physics (Matter in Motion/Electrodynamics)
Integrated Mathematics/Physics
Laboratory for Relativity, Quantum, and their Applications
Intermediate Classical Mechanics
Particle and Nuclear Physics

Other Notable Contributions

University/College Service

Faculty Grievance Committee, University of Notre Dame, 2018-2020
University Parking Committee, University of Notre Dame, 2016-2018

Chair, ad-hoc tenure committee, Union College, Fall 2009, Fall 2013
Committee on Teaching, Union College, 2008-2011
Ad-hoc tenure committee, Union College, Fall 2005
Center II junior representative, Faculty Review Board, Union College, 2003-2004

Departmental Service

Physics and Astronomy Diversity Committee, 2016-2017, Chair 2019-
Executive Committee on Appointments and Promotions, 2022-
Department of Physics and Astronomy Ombudsperson, Spring 2022
Undergraduate Curriculum Committee, 2014-2018, 2021-2022
Department of Physics Committee on Appointments and Promotions, 2018-2021
Strategic Planning/Department Review Committee, 2015-2017
Graduate Recruitment Committee, 2014-2015
Chair, Physics and Astronomy Assessment Committee, Union College, 2007-2011
Society of Physics Students/ΣΠΣ advisor, Union College, 2003-2007
Department of Physics and Astronomy Curriculum Committee, Union College, 1998-2011

Conference organization

Co-organizer, "Collective Neutrino Oscillations: From Quantum Information Science to Heavy Element Synthesis", two-week Mainz Institute for Theoretical Physics program, Johannes Gutenberg University, Mainz, Germany, May 2023

Co-organizer, "Radionuclides: Nuclear Physics, Astrophysical Models, and Observations", three-week Institute of Nuclear Theory Program INT 21-3, Seattle, Washington (hybrid), October 2021

Co-organizer, "Probing Nuclear Physics with Neutron Star Mergers", one-week ECT* workshop, Trento, Italy (virtual) July 2021

Co-organizer, "FRIB and the GW170817 kilonova", two-week FRIB Theory Alliance workshop, Michigan State University, East Lansing, Michigan, July 2018

Co-organizer, "The r-process: connecting FRIB with the cosmos", three-week International Collaborations in Nuclear Theory (ICNT) workshop, NSCL/Michigan State, June 2016

Organizer and host, inaugural FIRE collaboration meeting, University of Notre Dame, 2016

Organizer, "Nuclear and Neutrino Physics Inputs for Heavy Element Synthesis", two-week workshop as part of the CETUP* (Center for Underground Theoretical Physics and Related Areas) summer program, Lead, South Dakota, July 6-17, 2015

Reviews

Reviewed journal articles for
· *The Astrophysical Journal/The Astrophysical Journal Letters*
· *Physical Review C/Physical Review Letters*
· *Journal of Physics G: Nuclear and Particle Physics*
· *Monthly Notices of the Royal Astronomical Society*
· *Physics Letters B*
Reviewed grant proposals for
· The Department of Energy Office of Science
· The National Science Foundation
· Research Corporation

Refereed Publications

† *postdoctoral researcher* ⋆ *graduate student* ∗ *undergraduate*

[113] "Do we Owe our Existence to Gravitational Waves?", J. Ellis, B.D. Fields, R. Surman, submitted to *Physics Letters B* (2024) [arXiv:2402.03593].

[112] "Nuclear uncertainties associated with the ejecta of a neutron-star black-hole accretion disk", M.R. Mumpower, T.M. Sprouse, J.M. Miller, K.A. Lund, J. Cabrera Garcia, N. Vassh, G.C. McLaughlin, R. Surman, accepted in the *Astrophysical Journal* (2024) [arXiv:2404.03699].

[111] "Collective Neutrino Oscillations and Heavy-element Nucleosynthesis in Supernovae: Exploring Potential Effects of Many-body Neutrino Correlations", A.B. Balantekin, M. Cervia, A.V. Patwardhan, R. Surman, X. Wang *Astrophysical Journal* **967** 146 (2024) [arXiv:2311.02562].

[110] "Could a Kilonova Kill: A Threat Assessment", H.M.L. Perkins, J. Ellis, B.D. Fields, D.H. Hartmann, Z. Liu, G.C. McLaughlin, R. Surman, X. Wang *Astrophysical Journal* **961** 170 (2024) [arXiv:2310.11627].

[109] "Uncertainty Quantification of Mass Models using Ensemble Bayesian Model Averaging", Y. Saito, I. Dillmann, R. Kruecken, M.R. Mumpower, R. Surman, *Physical Review C* **109** 054301 (2024) [arXiv:2305.01782].

[108] "Thallium-208: A Beacon of In Situ Neutron Capture Nucleosynthesis", N. Vassh, X. Wang, M. Larivière, T. Sprouse, M. Mumpower, R. Surman, Z. Liu, G.C. McLaughlin, P. Denissenkov, F. Herwig, *Physical Review Letters* **132** 052701 (2024) [arXiv:2311.10895].

[107] "HD 222925: a New Opportunity to Explore the Astrophysical and Nuclear Conditions of r-Process Sites", E.M. Holmbeck, R. Surman, I.U. Roederer, G.C. McLaughlin, A. Frebel, *Astrophysical Journal* **951** 30 (2023) [arXiv:2210.10122].

[106] "Uranium Abundances and Ages of r-process Enhanced Stars with Novel U-II Lines", S.P. Shah, R. Ezzeddine, A.P. Ji, T.T. Hansen, I.U. Roederer, M. Catelan, Z. Hackshaw, E.M. Holdback, T.C. Beers, R. Surman, *Astrophysical Journal* **948** 122 (2023) [arXiv:2301.11945].

[105] "The Influence of Beta Decay Rates on r-Process Observables", K.A. Lund, J. Engel, G.C. McLaughlin, M.R. Mumpower, E.M. Ney, R. Surman, *Astrophysical Journal* **944** 144 (2023) [arXiv:2208.06373].

[104] "The need for a local nuclear physics feature in the neutron-rich rare-earths to explain solar r-process abundances", N. Vassh, G.C. McLaughlin, M.R. Mumpower, R. Surman, submitted to *Astrophysical Journal* (2022) [arXiv:2202.09437].

[103] "Proposed Lunar Measurements of r-Process Radioisotopes to Distinguish Origin of Deep-sea ^{244}Pu", X. Wang, A.M. Clark, J. Ellis, A.F. Ertel, B.D. Fields, B.J. Fry, Z. Liu, J.A. Miller, R. Surman, *Astrophysical Journal* **948** 113 (2023) [arXiv:2112.09607].

[102] "The Impact of Nuclear Physics Uncertainties on Interpreting Kilonova Light Curves", Y.L. Zhu, J. Barnes, K.A. Lund, T.M. Sprouse, N. Vassh, G.C. McLaughlin, M.R. Mumpower, R. Surman, *The 16th International Symposium on Nuclei in the Cosmos (NIC-XVI), EPJ Web of Conferences* **260** 03004 (2022).

[101] "Solar data uncertainty impacts on MCMC methods for r-process nucleosynthesis", N. Vassh, G.C. McLaughlin, M.R. Mumpower, R. Surman, *Frontiers in Physics* **10** 1046638 (2022) [arXiv:2210.10122].

[100] "Measuring the β-decay Properties of Neutron-rich Exotic Pm, Sm, Eu, and Gd Isotopes to Constrain the Nucleosynthesis Yields in the Rare-earth Region", G.G. Kiss, A. Vitéz-Sveiczer, Y. Saito, A. Tarifeño-Saldivia, M. Pallas, J.L. Tain, I. Dillmann, J. Agramunt, A. Algora, C. Domingo-Pardo, A. Estrade, C. Appleton, J.M. Allmond, P. Aguilera, H. Baba, N.T. Brewer, C. Bruno, R. Caballero-Folch, F. Calvino, P.J. Coleman-Smith, G. Cortes, T. Davinson, N. Fukuda, Z. Ge, S. Go, C.J. Griffen, R.K. Grzywacz, O. Hall, A. Horváth, J. Ha, L.J. Harkness-Brennan, T. Isobe, D. Kahl, T.T. King, A. Korgul, S. Kovács, R. Kruüken, S. Kubono, M. Labiche, J. Liu, J. Liang, M. Madurga, K. Miernik, F. Molina, A.I. Morales, M.R. Mumpower, E. Sacher, A. Navarro, N. Nepal, S. Nishimura, M. Piersa-Siłkowska, V. Phong, B.C. Rasco, B. Rubio, K.P. Rykaczewski, J. Romero-Barrientos, H. Sakurai, L. Sexton, Y. Shimizu, M. Singh, T. Sprouse, T. Sumikama, R. Surman, H. Suzuki, T.N. Szegedi, H. Takeda, A. Tolosa, K. Wang, M. Wolinska-Cichocka, P. Woods, R. Yokoyama, Z. Xu, *Astrophysical Journal* **936** 107 (2022).

[99] "The R-process Alliance: Abundance Universality among Some Elements at and between the First and Second R-Process Peaks", I.U. Roederer, J.J. Cowan, M. Pignatari, T.C. Beers, E.A. Den Hartog, R. Ezzeddine, A. Frebel, T.T. Hansen, E.M. Holmbeck, M.R. Mumpower, V.M. Placco, C.M. Sakari, R. Surman, N. Vassh, *Astrophysical Journal* **936** 84 (2022) [arXiv:2210.15105].

[99] "The R-process Alliance: A Nearly Complete r-Process Abundance Template Derived from Ultraviolet Spectroscopy of the r-Process-enhanced Metal-poor Star HD 222925", I.U. Roederer, J.E. Lawler, E.A. Den Hartog, V.M. Placco, R. Surman, T.C. Beers, R. Ezzeddine, A. Frebel, T.T. Hansen, K. Hattori, E.M. Holmbeck, C.M. Sakari, *Astrophysical Journal Supplement Series* **260** 27 (2022) [arXiv:2205.03426].

[98] "Searching for the origin of the rare-earth peak with precision mass measurements across Ce-Eu isotopic chains", R. Orford, N. Vassh, J.A. Clark, G.C. McLaughlin, M.R. Mumpower, G. Savard, R. Surman, F. Buchinger, D.P. Burdette, M.T. Burkey, D.A. Gorelov, J.W. Klimes, W.S. Porter, K.S. Sharma, A.A. Valverde, L. Varriano, X.L. Yan, *Physical Review C* **105**, L052802 (2022).

[97] "r-Process Radioisotopes from Near-Earth Supernovae and Kilonovae", X. Wang†, A.M. Clark, J. Ellis, A.F. Ertel, B.D. Fields, Z. Liu, J.A. Miller, R. Surman, *Astrophysical Journal* **923** 219 (2021) [arXiv:2105:05178].

[96] "Kilonovae Across the Nuclear Physics Landscape: The Impact of Nuclear Physics Uncertainties on r-process-powered Emission", J. Barnes, Y.L. Zhu, K.A. Lund, T.M. Sprouse⋆, N. Vassh†, G.C. McLaughlin, M.R. Mumpower, R. Surman, *Astrophysical Journal* **918** 44 (2021) [arXiv:2010.11182].

[95] "Modeling Kilonova Light Curves: Dependence on Nuclear Inputs", Y.L. Zhu, K.A. Lund, J. Barnes, T.M. Sprouse⋆, N. Vassh†, G.C. McLaughlin, M.R. Mumpower, R. Surman, *Astrophysical Journal* **906** 94 (2021) [arXiv:2010.03668].

[94] "Reconstructing Masses of Merging Neutron Stars from Stellar r-Process Abundance Signatures", E.M. Holmbeck⋆, A. Frebel, G.C. McLaughlin, R. Surman, R. Fernandez, B.D. Metzger, M.R. Mumpower, T.M. Sprouse⋆, *Astrophysical Journal* **909** 21 (2021) [arXiv:2010.01621].

[93] "Following nuclei through nucleosynthesis: a novel tracing technique", T.M. Sprouse*, M.R. Mumpower, R. Surman, *Physical Review C* **104** 015803 (2021) [arXiv:2008.06075].

[92] "Propagation of Hauser-Feshbach uncertainty estimates to r-process nucleosynthesis: Benchmark of statistical property models for neutron rich nuclei far from stability", S. Nikas, G. Perdikakis, M. Beard, R. Surman, M.R. Mumpower, P. Tsintari, *submitted to Physical Review C* (2020) [arXiv:2010.01698].

[91] "Constraining the Rapid Neutron-Capture Process with Meteoritic I-129 and Cm-247", B. Côté, M. Eichler, A. Yagüe, N. Vassh†, M.R. Mumpower, B. Világos, B. Soós, A. Arcones, T.M. Sprouse*, R. Surman, M. Pignatari, B. Wehmeyer, T. Raucher, M. Lugaro, *Science* **371** 945 (2021) [arXiv:2006.04833].

[90] "Probing the fission properties of neutron-rich actinides with the astrophysical r process", N. Vassh†, M.R. Mumpower, T.M. Sprouse*, R. Surman, R. Vogt, *Proceedings of the International Workshop on Fission Product Yields (FPY)* **242** 04002 (2020) [arXiv:2006.10905].

[89] "Markov Chain Monte Carlo Predictions of Neutron-rich Lanthanide Properties as a Probe of r-process Dynamics", N. Vassh†, G.C. McLaughlin, M.R. Mumpower, R. Surman, *Astrophysical Journal* **907** 98 (2021) [arXiv:2006.04322].

[88] "MeV Gamma Rays from Fission: A Distinct Signature of Actinide Production in Neutron Star Mergers", X. Wang†, N. Vassh†, T.M. Sprouse*, M. Mumpower, R. Vogt, J. Randrup, R. Surman, *Astrophysical Journal Letters* **903** L3 (2020) [arXiv:2008.03335].

[87] "The R-process Alliance: The Peculiar Chemical Abundance Pattern of RAVE J183013.5-455510", V.M. Placco, R.M. Santucci, Z. Yuan, M.K. Mardini, E.M. Holmbeck*, X. Wang†, R. Surman, T.T. Hansen, I.U. Roederer, T.C. Beers, A. Choplin, A.P. Ji, R. Ezzeddine, A. Frebel, C.M. Sakari, D.D. Whitten, J. Zepeda, *Astrophysical Journal* **897** 78 (2020) [arXiv:2006.04538].

[86] "Lifting the secrets of stardust", A. Frebel, R. Surman, *Nature Astronomy* **4** 564 (2020).

[85] "Co-production of light and heavy r-process elements via fission deposition", N. Vassh†, M.R. Mumpower, G.C. McLaughlin, T.M. Sprouse*, R. Surman, *Astrophysical Journal* **896** 28 (2020) [arXiv:1911.07766].

[84] "Characterizing r-Process Sites through Actinide Production", E.M. Holmbeck*, R. Surman, A. Frebel, G.C. McLaughlin, M.R. Mumpower, T.M. Sprouse*, T. Kawano, N. Vassh, T.C. Beers, *submitted to Journal of Physics: Conference Series* Nuclear Physics in Astrophysics IX [arXiv:2001.08792].

[83] "Full Transport General Relativistic Radiation Magnetohydrodynamics for Nucleosynthesis in Collapsars", J.M. Miller, T.M. Sprouse*, C.L. Fryer, B.R. Ryan, J.C. Dolence, M.R. Mumpower, R. Surman, *Astrophysical Journal* **902** 66 (2020) [arXiv:1912.03378].

[82] "Sandblasting the r-Process: Spallation of Ejecta from Neutron Star Mergers", X. Wang†, B. Fields, M.R. Mumpower, T.M. Sprouse*, R. Surman, N. Vassh†, *Astrophysical Journal* **893** 92 (2020) [arXiv:1909.12889].

[81] "Propagation of Statistical Uncertainties of Skyrme Mass Models to Simulations of r-Process Nucleosynthesis", T.M. Sprouse*, R. Navarro Perez, R. Surman, M.R. Mumpower, G.C. McLaughlin, N. Schunck, *Physical Review C* **101** 055803 (2020) [arXiv:1901.10337].

[80] "Exploring the mass surface near the rare-earth abundance peak via precision mass measurements at JYFLTRAP", M. Vilen, J.M. Kelly, A. Kankainen, M. Brodeur, A. Aprahamian, L. Canete, R. de Groote, A. deRoubin, T. Eronen, A. Jokinen, I.D. Moore, M.R. Mumpower, D.A. Nesterenko, J. O'Brien, A. Pardo Perdomo, H. Penttilä, M. Reponen, S. Rinta-Antila, R. Surman, *Physical Review C* **101** 034312 (2020) [arXiv:1908.05043].

[79] "Gamma Rays from Kilonova: A Potential Probe of r-process Nucleosynthesis", O. Korobkin, A.M. Hungerford, C.L. Fryer, M.R. Mumpower, W.G. Misch, T.M. Sprouse*, J. Lippuner, R. Surman, A.J. Couture, P.F. Blosser, F. Shirazi, W.P. Even, W.T. Vestrand, R.S. Miller, *Astrophysical Journal* **889** 168 (2020) [arXiv:1905.05089].

[78] "Strong one-neutron emission from two-neutron unbound states in β decays of the r-process nuclei ^{86,87}Ga", R. Yokoyama, R. Grzywacz, B.C. Rasco, N. Brewer, K.P. Rykaczewski, I. Dillmann, J.L. Tain, S. Nishimura, D.S. Ahn, A. Algora, J.M. Allmond, J. Agramunt, H. Baba, S. Bae, C.G. Bruno, R. Caballero-Folch, F. Calvino, P.J. Coleman-Smith, G. Cortes, T. Davinson, C. Domingo-Pardo, A. Estrade, N. Fukuda, S. Go, C.J. Griffin, J. Ha, O. Hall, L.J. Harkness-Brennan, J. Heideman, T. Isobe, D. Kahl, M. Karny, T. Kawano, L.H. Khiem, T.T. King, G.G. Kiss, A. Korgul, S. Kubono, M. Labiche, I. Lazarus, J. Liang, J. Liu, G. Lorusso, M. Madurga, K. Matsui, K. Miernik, F. Montes, A.I. Morales, P. Morrall, N. Nepal, R.D. Page, V.H. Phong, M. Piersa, M. Prydderch, V.F.E. Pucknell, M.M. Rajabali, B. Rubio, Y. Saito, H. Sakurai, Y. Shimizu, J. Simpson, M. Singh, D.W. Stracener, T. Sumikama, R. Surman, H. Suzuki, H. Takeda, A. Tarifeño-Saldivia, S.L. Thomas, A. Tolosa-Delgado, M. Wolińska-Cichocka, P.J. Woods, X.X. Xu, *Physical Review C* **100** 031302 (2019).

[77] "The Nuclear Physics Uncertainty on Kilonova Heating Rates and the Role of Fission", Y.L. Zhu, T.M. Sprouse*, M.R. Mumpower, N. Vassh†, R. Surman, G.C. McLaughlin, *Nuclei in the Cosmos XV, Springer Proceedings in Physics* **219** 469 (2019).

[76] "Fission Properties Relevant for GW170817", M.R. Mumpower, N. Vassh†, T.M. Sprouse*, P. Jaffke, T. Kawano, E.M. Holmbeck*, Y.L. Zhu, R. Surman, G.C. McLaughlin, P. Möller, *Nuclei in the Cosmos XV, Springer Proceedings in Physics* **219** 121 (2019).

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[136] "The microphysics of heavy element origins", seminar, SLAC National Accelerator Laboratory, Menlo Park, California, April 2024

[135] "The nuclear physics of multi-messenger astrophysics", opening plenary talk, APS April Meeting, Sacramento, California, April 2024

[134] "The nuclear physics of heavy element origins", colloquium, University of Washington, Seattle, Washington, February 2024

[133] "Nuclear physics and the origin of the heavy elements", colloquium, North Carolina State University, Raleigh, NC, January 2024

[132] "Nuclear physics and the origin of the heavy elements", colloquium, Ohio University, Athens, Ohio, December 2023

[131] "Beta-decay properties and r-process observables", invited workshop talk, APS DNP Fall Meeting, Maui, Hawaii, November 2023

[130] "Heavy element synthesis in the FRIB era", invited workshop talk, Joint RIKEN/N3AS Workshop on Multi-Messenger Astrophysics, Maui, Hawaii, November 2023

[129] "Observables of r-process nucleosynthesis and connections to nuclear experiment", MICRA2023: Microphysics in Computational Relativistic Astrophysics, ECT*, Trento, Italy, September 2023

[128] "Neutrinos and heavy element nucleosynthesis observables", Institute of Nuclear Theory Program INT-23-2: Astrophysical Neutrinos and the origin of the elements, University of Washington, August 2023

[127] "Nuclear physics and the origins of the heavy elements", colloquium, Department of Physics, Johannes Gutenberg Universität Mainz, May 2023

[126] "Excited nuclear states in r-process nucleosynthesis", invited talk, FRIB-TA Topical Program "Nuclear Isomers in the Era of FRIB", Facility for Rare Isotope Beams, East Lansing, MI, May 2022

[125] "Status of the r process in astrophysical systems", invited talk, KITP Program "Neutrinos as a Portal to New Physics and Astrophysics", Kavli Institute for Theoretical Physics, University of California, Santa Barbara, CA, March 2022

[124] "Astrophysical alchemy: the mysterious origins of the heavy elements", invited seminar, London Research Seminar Series, University of Notre Dame London campus, London, England, October 2021

[123] "Nuclear physics and r-process observables", invited talk, African Nuclear Physics Conference 2021 (virtual), September 2021

[122] "Neutron capture in astrophysics", invited talk, North American Storage Rings and Neutron Captures Workshop (virtual), June 2021

[121] "Nuclear physics and r-process observables", invited talk, Key Reactions in Nuclear Astrophysics workshop, ECT* (virtual), June 2021

[120] "The astrophysical origins of the heaviest elements", colloquium, Massachusetts Institute of Technology (virtual), March 2021

[119] "r-Process theory and the connections to nuclear physics", invited talk, JINA Horizons (virtual), December 2020

[118] "Nuclear data and the interpretation of r-process observables", invited talk, FRIB First Experiments: Proposal Preparation Workshop, FRIB (virtual), May 2020

[117] "Neutron star mergers and the origins of the heaviest elements", Theoretical Physics colloquium, Arizona State University (virtual), April 2020

[116] "Nuclear physics and the interpretation of r-process observables", INT20-1b Online Pre-Workshop, Institute of Nuclear Theory, April 2020

[115] "Neutron star mergers and the origins of the heaviest elements", colloquium, Department of Astronomy, University of Illinois, Champaign, IL, February 2020

[114] "r-process: synthesizing observations, simulation, and nuclear physics", invited talk, R-Process Alliance (RPA) workshop, Massachusetts Institute of Technology, November 2019

[113] "Nuclear structure of exotic nuclei and astrophysical nucleosynthesis", invited talk, Gogny 2019, Lawrence Livermore National Laboratory, November 2019

[112] "Neutron star mergers and the origins of the heaviest elements", colloquium, Department of Physics, Pennsylvania State University, State College, PA, October 2019

[111] "Forging the heaviest elements", colloquium, Department of Physics, Illinois State University, Normal, IL, October 2019

[110] "Fission and the origins of the heaviest elements", invited talk, International Workshop on Fission Product Yields, Los Alamos National Laboratory, October 2019

[109] "Nuclear data needs for neutron capture nucleosynthesis", invited talk, ATLAS/CARIBU Nuclear Astrophysics Workshop, Argonne National Laboratory, July 2019

[108] "Nuclear physics of r-process abundance patterns", Workshop on Nuclear and astrophysics aspects for the rapid neutron capture process in the era of multimessenger observation, ECT*, Trento, IT, July 2019

[107] "Nuclear physics and the GW170817 kilonova", invited talk, April Meeting of the American Physical Society, Denver, CO, April 2019

[106] "The microphysics of the GW170817 kilonova", colloquium, Department of Physics, Rutgers University, New Brunswick, NJ, November 2018

[105] "The microphysics of the GW170817 kilonova", colloquium, Department of Physics, University of Massachusetts-Lowell, Lowell, MA, September 2018

[104] "Nuclear physics issues and the r-process", invited talk, To 2020 and Beyond: Radionuclide Astronomy, Los Alamos National Laboratory, Los Alamos, NM, August 2018

[103] "The microphysics of the GW170817 kilonova", Nuclear and Chemical Sciences colloquium, Lawrence Livermore National Laboratory, Livermore, CA, June 2018

[102] "Nuclear astrophysics", invited lectures, Exotic Beam Summer School, Lawrence Berkeley National Laboratory, Berkeley, CA, June 2018

[101] "Understanding r-process nucleosynthesis through nuclear data", invited talk, American Astronomical Society Meeting 232, Denver, CO, June 2018

[100] "Nuclear physics and the r process in the multi messenger era", invited talk, JINA-CEE Frontiers, University of Notre Dame, Notre Dame, IN, May 2018

[99] "The microphysics of the GW170817 kilonova", colloquium, Department of Physics, University of Wisconsin, Madison, WI, May 2018

[98] "The microphysics of the GW170817 kilonova", colloquium, Department of Physics, Louisiana State University, Baton Rouge, LA, April 2018

[97] "The astrophysical origins of the heaviest elements", colloquium, Department of Physics and Astronomy, Michigan State University, East Lansing, MI, April 2018

[96] "Nuclear physics and the astrophysical production of the heaviest elements", Physics/Theoretical Division colloquium, Los Alamos National Laboratory, Los Alamos, NM, March 2018

[95] "Forging the heaviest elements", Physics Division colloquium, Argonne National Laboratory, Lemont, IL, February 2018

[94] "β-decay data in r-process analysis", invited talk, FRIB Decay Station Workshop, Michigan State University, East Lansing, MI, January 2018

[93] "r-process nucleosynthesis and radioactivity in merger ejecta", invited talk, KITP Program "Understanding GW170817: The First Double Neutron Star Merger", Kavli Institute for Theoretical Physics, University of California, Santa Barbara, CA, December 2017

[92] "The astrophysical origins of the heaviest elements", Nuclear and Particle Physics colloquium, Massachusetts Institute of Technology, Boston, MA, October 2017

[91] "Quantifying nuclear physics uncertainties in r-process abundance patterns", invited talk, 16th International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics (CGS16), Shanghai, China, September 2017

[90] "Astrophysics and FRIB", invited review talk, FRIB Day 1 Science at the 2017 Low Energy Community Meeting, Argonne National Laboratory, August 2017

[89] "Nuclear physics inputs for nucleosynthesis", Institute of Nuclear Theory Program INT-17-2b Electromagnetic Signatures of r-Process Nucleosynthesis in Neutron Star Binary Mergers, University of Washington, July 2017

[88] "Nuclear masses and the site of r-process nucleosynthesis", invited talk, Nuclear Physics in Astrophysics VIII, Catania, Sicily, June 2017

[87] "Astrophysical Alchemy", colloquium, Ball State University, Muncie, IN, April 2017

[86] "The mysterious origins of the heaviest elements", colloquium, Washington University, St. Louis, MO, March 2017

[85] "Neutron capture rates and r-process nucleosynthesis", Institute of Nuclear Theory Program INT-17-1a: Toward Predictive Theories of Nuclear Reactions Across the Isotopic Chart, University of Washington, March 2017

[84] "Neutrinos and heavy element synthesis", invited talk, Precision Investigations of the Neutrino Sector, SLAC, Menlo Park, California, March 2017

[83] "Nuclear masses and the site of r-process nucleosynthesis", invited talk, Hirschegg 2017 Neutron star mergers: from gravitational waves to nucleosynthesis, Hirschegg, Austria, January 2017

[82] "Nucleosynthesis and neutrino physics in compact object mergers", invited talk, April Meeting of the American Physical Society, Washington, D.C., January 2017

[81] "Neutrinos and heavy element synthesis", invited talk, 8th Symposium on Large TPCs for Low-Energy Rare Event Detection, Paris Diderot University, Paris, France, December 2016

[80] "The origin of the heaviest elements: an interdisciplinary approach", invited talk, Fall Meeting of the American Physical Society Division of Nuclear Physics, Vancouver, Canada, October 2016

[79] "The puzzle of the r-process astrophysical site: a nuclear physics solution?", invited plenary talk, International Nuclear Physics Conference 2016, Adelaide, Australia, September 2016

[78] "Astrophysical alchemy: the mysterious origins of the heavy elements", invited Clare Boothe Luce lecture, University of Dallas, September 2016

[77] "Connecting nuclear masses to the mysterious origins of the heavy elements", Institute of Nuclear Theory Program INT-16-2a: Bayesian Methods in Nuclear Physics, University of Washington, July 2016

[76] "Systematic and Statistical Uncertainties in Simulated r-Process Abundances due to Uncertain Nuclear Masses", contributed plenary talk, Nuclei in the Cosmos XIV, Niigata, Japan, June 2016

[75] "Forging the heaviest elements", astrophysics seminar, Ohio State University, May 2016

[74] "Nucleosynthesis: FRIB and the origin of the heavy elements", invited talk, FRIB Theory Alliance Inaugural Meeting, Michigan State University, March 2016

[73] "The astrophysical r-process: neutrino/nuclear aspects and observational constraints", astrophysics seminar, University of Notre Dame, February 2016

[72] "Forging the heaviest elements", seminar, University of Wisconsin-Madison, February 2016

[71] "Nuclear data and the r-process abundance pattern", JINA-CEE Research Seminar, Michigan State University, January 2016

[70] "Nuclear masses and the r-process abundance pattern", invited talk, Information and statistics in nuclear experiment and theory (ISNET-3), ECT*, Trento, Italy, November 2015

[69] "The mysterious origins of the heavy elements", astrophysics seminar, St. Mary's University, Halifax, NS, October 2015

[68] "r-Process abundance pattern variations due to nuclear physics uncertainties", invited talk, Mazurian Lakes Conference on Physics, Piaski, Poland, September 2015

[67] "Astrophysical alchemy", CETUP* outreach talk, Black Hills State University, July 2015

[66] "Neutrino interactions and heavy element synthesis", Institute of Nuclear Theory Program INT-15-2a: Neutrino Astrophysics and Fundamental Properties, University of Washington, June 2015

[65] "Nuclear Reaction Rate Needs for Heavy Element Nucleosynthesis", Institute of Nuclear Theory Program INT-15-58W: Reactions and Structure of Exotic Nuclei, University of Washington, March 2015

[64] "FRIB and the Origin of the Heavy Elements", invited talk, 2015 Conference of The National Society of Black Physicists, Baltimore, Maryland, February 2015

[63] "Nuclear physics and the origin of the heaviest elements", Physics Division seminar, Argonne National Laboratory, October 2014

[62] "Astrophysical alchemy: creating the heaviest elements in the galaxy's biggest explosions", invited seminar, Conference Experience for Undergraduates, 4th Joint Meeting of the Divisions of Nuclear Physics of the APS and JPS, Waikoloa, Hawaii, October 2014

[61] "r-Process Sensitivities to Neutrino and Nuclear Physics", invited talk, ECT* Workshop on Nuclear Physics and Astrophysics of Neutron-Star Mergers and Supernovae, and the Origin of r-Process Elements, September 2014

[60] "Astrophysical alchemy: heavy element synthesis in supernovae and compact object mergers", colloquium, Central Michigan University, Mount Pleasant, Michigan, September 2014

[59] "Heavy element synthesis in black hole accretion disk outflows", invited talk, Nuclei in the Cosmos, Debrecen, Hungary, July 2014

[58] "Sensitivity studies for r-process nucleosynthesis", invited talk, Advances in Radioactive Isotope Science (ARIS) 2014, Tokyo, Japan, June 2014

[57] "Astrophysical alchemy: creating the heaviest elements in the galaxy's biggest explosions", outreach talk, Albany Area Amateur Astronomers, Schenectady, New York, May 2014

[56] "The sensitivity of r-process nucleosynthesis to individual nuclear properties", invited talk, American Physical Society April Meeting, Savannah, Georgia, April 2014

[55] "r-Process Nucleosynthesis in GRBs", invited talk, Workshop on Supernovae and Gamma-Ray Bursts, YITP, Kyoto, Japan, November 2013

[54] "Neutrinos and black hole accretion disk outflow nucleosynthesis", invited talk, Southeastern Section of the American Physical Society annual meeting, Bowling Green, Kentucky, November 2013

[53] "Neutrinos and heavy element synthesis", invited talk, Implications of Neutrino Flavor Oscillations (INFO 13) Workshop, Santa Fe, New Mexico, August 2013

[52] "Neutrinos and heavy element synthesis", invited talk, CETUP* program on Neutrino Physics and Astrophysics, Lead, South Dakota, July 2013

[51] "Nuclear data needs for r-process nucleosynthesis", invited talk, Gordon Research Conference in Nuclear Chemistry, Colby-Sawyer College, June 2013

[50] "Nuclear data and rapid neutron capture nucleosynthesis", invited parallel session talk, International Nuclear Physics Conference 2013, Florence, Italy, June 2013

[49] "Nuclear data and the astrophysical site of the r process", invited talk, 2013 Canadian Association of Physicists Congress, Montreal, Quebec, May 2013

[48] "Neutrinos and nucleosynthesis in supernovae and collapsars", invited talk, Fifty-one Ergs Supernova Workshop, North Carolina State University, May 2013

[47] "The sensitivity of r-process nucleosynthesis to beta-delayed neutron emission probabilities", invited talk, North American Workshop on Beta-delayed Neutron Emission, Oak Ridge National Laboratory, May 2013

[46] "Nuclear data and the astrophysical site of the r process", invited talk, International Workshop XLI on Gross Properties of Nuclei and Nuclear Excitations, Hirschegg, Austria, January 2013

[45] "The sensitivity of r-process nucleosynthesis to the properties of neutron-rich nuclei", invited talk, 5th International Conference on Fission and Properties of Neutron-rich Nuclei, Sanibel Island, Florida, November 2012

[44] "Open questions in r-process and νp-process nucleosynthesis", invited review talk, Nuclear Astrophysics Town Meeting, Detroit, MI, October 2012

[43] "Neutrino and nuclear physics in the astrophysical synthesis of the heaviest elements", colloquium, Department of Physics, University of Notre Dame, August 2012

[42] "The Rare Earth Peak: an overlooked r-process diagnostic", Institute of Nuclear Theory Program 12-2a Core Collapse Supernovae: Models and Observable Signals, University of Washington, July 2012

[41] "Nuclear data for r-process nucleosynthesis", nuclear physics seminar, Oak Ridge National Laboratory, April 2012

[40] "Nuclear data for r-process models", Joint Institute for Nuclear Astrophysics webinar, University of Notre Dame, April 2012

[39] "Nuclear data for r-process nucleosynthesis", nuclear physics seminar, National Superconducting Cyclotron Laboratory, Michigan State University, November 2011

[38] "Neutrinos and Nucleosynthesis", invited talk, Frontiers in Neutrino Physics, AstroParticule et Cosmologie, Paris, France, October 2011

[37] "Heavy element synthesis in supernovae and gamma-ray bursts", colloquium, Department of Physics, Florida State University, September 2011

[36] "The nuclear physics of r-process nucleosynthesis", nuclear physics seminar, Department of Physics, Florida State University, September 2011

[35] "Sterile Neutrinos and Supernova Nucleosynthesis", invited talk, Sterile Neutrinos at the Crossroads 2011, Center for Neutrino Physics, Virginia Tech, September 2011

[34] "Neutron capture rates and r-process nucleosynthesis", invited talk, CGS14: 14th International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics, Guelph, Canada, August 2011

[33] "Beta decay rates and r-process nucleosynthesis", invited contribution, Joint ATLAS-HRIBF-NSCL-FRIB Users Meeting, National Superconducting Cyclotron Laboratory, Michigan State University, August 2011

[32] "Neutrino oscillations and supernova nucleosynthesis", invited talk, HANSE 2011: Hamburg Neutrinos from Supernova Explosions, DESY, Germany, July 2011

[31] "Nuclear data and r-process nucleosynthesis", invited talk, Workshop on "Decay Spectroscopy at CARIBU: Advanced Fuel Cycle Applications, Nuclear Structure, and Astrophysics", Argonne National Laboratory, April 2011

[30] "Heavy element synthesis in supernovae and gamma-ray bursts", colloquium, Department of Astronomy, University of Illinois, March 2011

[29] "Neutrinos and the r-process in hot astrophysical environments", nuclear physics seminar, University of Notre Dame, March 2011

[28] "Heavy element synthesis in supernovae and gamma-ray bursts", astrophysics colloquium, Rochester Institute of Technology, March 2011

[27] "Topics in Nuclear Astrophysics", invited lecturer for five lectures at the Norwegian Centre for International Cooperation in Higher Education/Michigan State University/University of Oslo Nuclear Physics Winter School, Michigan State University, January 3-7, 2011

[26] "Astrophysical Alchemy: Creating the heaviest elements within the galaxy's biggest explosions", colloquium, Hamilton College, January 2011

[25] "Modeling r-Process Nucleosynthesis in Hot Astrophysical Flows", invited talk, American Physical Society Division of Nuclear Physics Fall Meeting, Santa Fe, NM, November 2010

[24] "Astrophysical Alchemy: Creating the heaviest elements within the galaxy's biggest explosions", astrophysics seminar, Rensselaer Polytechnic Institute, and colloquium, Union College, September 2010

[23] "Neutrinos and Nucleosynthesis", invited talk, NOW 2010 Neutrino Oscillations Workshop, Conca Specchiulla, Italy, September 2010

[22] "Neutron capture and the r process", invited talk, EMMI Workshop *Neutron Matter in Astrophysics: From Neutron Stars to the r Process*, GSI, Darmstadt, Germany, July 2010

[21] "Nucleosynthesis in extreme astrophysical environments", nuclear physics seminar, Rutgers University, April 2010

[20] "Nuclear data and r-process nucleosynthesis", nuclear physics seminar, University of Tennessee, Knoxville, March 2010

[19] "Nuclear data and r-process nucleosynthesis", invited talk, COMEX3, Third International Conference on "Collective Motion in Nuclei under Extreme Conditions", Mackinac Island, MI, June 2009

[18] "The Astrophysics and Nuclear Physics of r-Process Nucleosynthesis", seminar, TRIUMF National Laboratory, Vancouver, Canada, October 2008

[17] "Neutron Capture and the Site of the r Process", seminar, National Superconducting Cyclotron Laboratory, Michigan State University, September 2008

[16] "Aspects of the Astrophysics and Nuclear Physics of r-Process Nucleosynthesis", invited talk, Workshop on Statistical Nuclear Physics and Applications in Astrophysics and Technology, Ohio University, Athens, OH, July 2008

[15] "Neutrinos from Black Hole Accretion Disks", astrophysics seminar, North Carolina State University, May 2008

[14] "Neutrinos from Black Hole Accretion Disks", high energy physics seminar, Duke University, April 2008

[13] "The Nuclear Physics of Black Hole Accretion Disks and Outflows", invited talk, ECT* Workshop on Exotic Modes of Excitation: from Nuclear Structure to Astrophysics, Trento, Italy, October 2007

[12] "Neutrinos from Black Hole Accretion Disks", invited talk, Santa Fe Summer Workshop on Implications of Neutrino Flavor Oscillations, Santa Fe, NM, July 2007

[11] "The Ashes of Gamma-Ray Bursts", colloquium, Department of Physics and Astronomy, Bucknell University, April 2007

[10] "The Role of Neutrinos in Supernovae and Gamma-Ray Bursts", invited talk, Nuclear Physics in Astrophysics III, Dresden, Germany, March 2007

[9] "Gamma-Ray Bursts: Neutrinos and Nucleosynthesis", nuclear physics seminar, Institute of Nuclear and Particle Physics, Ohio University, October 2006

[8] "Neutrinos and Nucleosynthesis in Gamma-Ray Bursts", contributed plenary talk, Nuclei in the Cosmos IX, Geneva, Switzerland, June 2006

[7] "Nucleosynthesis from Black Hole Accretion Disks", seminar, Kavli Institute of Theoretical Physics, *The Supernova Gamma-Ray Burst Connection*, University of California - Santa Barbara, March 2006

[6] "The Ashes of Gamma-Ray Bursts", invited Conference Experience for Undergraduates Seminar, American Physical Society Division of Nuclear Physics Fall Meeting, Maui, Hawaii, September 2005

[5] "Neutrinos and Nucleosynthesis in Supernovae and Gamma-Ray Bursts", Institute of Nuclear Theory Program INT-05-2a - Underground Science, University of Washington, July 2005

[4] "Nucleosynthesis in Gamma-Ray Bursts", invited talk, American Physical Society April Meeting, Tampa, FL, April 2005

[3] "Neutrinos and Nucleosynthesis in Gamma-Ray Burst Accretion Disks and Outflows", Institute of Nuclear Theory, Workshop on The Supernova-Gamma Ray Burst Connection, University of Washington, July 2004

[2] "Supernovae and the Dynamical r Process", Nuclear and Particle Physics seminar, Rensselaer Polytechnic Institute, November 1999

[1] "Neutrinos and the Formation of Heavy Elements", invited talk, Astronomical Society of New York Spring Meeting, April 1999