CURRICULUM VITAE

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RESEARCH INTERESTS

Ab initio nuclear theory. Collective nuclear structure. Group theoretical and computational methods for strongly-interacting quantum many-body systems.

APPOINTMENTS

Professor, *Department of Physics and Astronomy, University of Notre Dame* 2023–
Associate Professor, *Department of Physics and Astronomy, University of Notre Dame* 2013–2023
Associate Chair & Director of Graduate Studies, 2016–2022.
Assistant Professor, *Department of Physics and Astronomy, University of Notre Dame* 2007–2013
Postdoctoral Associate, *Physics Department, Yale University* (F. Iachello, advisor) 2003–2007

EDUCATION

Ph.D., Physics. *Yale University*. With distinction. (R. F. Casten, advisor) 2003
M.Phil., 1999. **M.S.**, 1998.
B.S., Physics, Mathematics. *Oglethorpe University*. With honors. *Summa cum laude.* 1994

AWARDS

Burns Award for outstanding mentorship, *Graduate School, University of Notre Dame* 2023
Shilts/Leonard Teaching Award, *College of Science, University of Notre Dame* 2017
Faculty Fellow, Kaneb Center for Teaching and Learning, *University of Notre Dame* 2014
Joyce Award for Excellence in Undergraduate Teaching, *University of Notre Dame* 2014
Cottrell Scholar Award, *Research Corporation for Science Advancement* 2010

PROFESSIONAL SERVICE/CONTRIBUTIONS

Associate Editor, *European Physical Journal A: Hadrons and Nuclei* (2017–).

Conference organizing and advisory committees:

Nuclear Structure, International Advisory Committee, Berkeley, California, August 2010.
—, Knoxville, Tennessee, July 2016.

Horizons on Innovative Theories, Experiments, and Supercomputing in Nuclear Physics, Organizing Committee, New Orleans, Louisiana, June 2012.

International Conference on Nuclear Theory in the Supercomputing Era, Scientific Advisory Committee, Ames, Iowa, May 2013.

—, Khabarovsk, Russia, September 2014.

—, Khabarovsk, Russia, September 2016.

—, Daejeon, Republic of Korea, October/November 2018.

—, Roorkee, India, October 2020 (cancelled).

Symmetries and Order: Algebraic Methods in Many Body Systems, Organizing Committee, New Haven, Connecticut, October 2018.

The 32nd Annual Midwest Theory Get-Together, Chair, Organizing Committee, Argonne, Illinois, October 2019.

Conference proceedings co-editor: *Proceedings of the Conference on Horizons on Innovative Theories, Experiments, and Supercomputing in Nuclear Physics 2012* K. D. Launey, M. A. Caprio, J. Escher, J. Hirsch, and C. W. Johnson, eds., Journal of Physics: Conference Series, Vol. 203 (IOP Publishing, London, 2012).

Lecturer at national/international advanced training schools:

Balkan School on Nuclear Physics, Akdeniz University, Adrasan, Turkey, September 2010.

Training in Advanced Low Energy Nuclear Theory (TALENT) course "Theory for Exploring Nuclear Structure Experiments", GANIL, Caen, France, August 2014.

National Nuclear Physics Summer School (NNPSS), Yale University, New Haven, Connecticut, June 2018.

Exotic Beam Summer School (EBSS), University of Notre Dame, Notre Dame, Indiana, June 2022.

Speaker at national undergraduate research or junior scientist programs:

Conference Experience for Undergraduates, *APS Division of Nuclear Physics*, Pittsburgh, Pennsylvania, October 2017

Junior Researcher Workshop, *JINA-CEE Frontiers in Nuclear Astrophysics*, Notre Dame, Indiana, May 2018

Conference Experience for Undergraduates, *APS Division of Nuclear Physics*, Crystal City, Virginia, October 2019

Referee articles for journals and proceedings (126 papers reviewed to date):

Acta Physica Polonica B, American Institute of Physics Conference Proceedings, Annals of Physics, Canadian Journal of Physics, Chinese Physics C, Computer Physics Communications, European Physical Journal A, Europhysics Letters, International Journal of Modern Physics E, Journal of Computational Physics, Journal of Mathematical Physics, Journal of Physics A, Journal of Physics G,

Journal of Physics Conference Series, Journal of Statistical Mechanics: Theory and Experiment (JSTAT), Modern Physics Letters A, Molecular Physics, Nuclear Instruments and Methods in Physics Research A, Nuclear Physics A, Physica Scripta, Physical Review A, Physical Review C, Physical Review Letters, Physics Letters B, Physics Today, Reports on Progress in Physics.

Recognized by the American Physical Society as an *APS Outstanding Referee* (2022).

Review grant proposals and/or serve on review panels for the US National Science Foundation, US Department of Energy, and Research Corporation for Science Advancement.

Co-organizer, Working Group Session on Education, *2022 NSAC Long-Range Plan Town Hall Meeting on Nuclear Structure, Reactions and Astrophysics*, Argonne, Illinois, November 2022.

Session chair at conferences:

Nuclear Structure, Berkeley, California, August 2010.

International Conference on Nuclear Theory in the Supercomputing Era, Ames, Iowa, May 2013.

APS April Meeting, Savannah, Georgia, April 2014.

Properties of Exotic Nuclei and Asymmetric Nuclear Matter (CUSTIPEN workshop), Lanzhou, China, August 2015.

The 29th Annual Midwest Theory Get-Together, Argonne, Illinois, September 2016.

APS Division of Nuclear Physics, Vancouver, British Columbia, Canada, October 2016.

APS Division of Nuclear Physics, Pittsburgh, Pennsylvania, October 2017.

From Bound States to the Continuum: Connecting Bound State Calculations with Scattering and Reaction Theory (FRIB Theory Alliance workshop), East Lansing, Michigan, June 2018.

Nuclear Structure, Berkeley, California, June 2022.

The 33rd Midwest Theory Get-Together, Argonne, Illinois, September/October 2022.

Theoretical Justifications and Motivations for Early High-Profile FRIB Experiments (FRIB Theory Alliance workshop), East Lansing, Michigan, May 2023.

The 34th Midwest Theory Get-Together, Argonne, Illinois, September 2023.

STUDENTS SUPERVISED

at Notre Dame

Doctoral theses

Fengqiao Luo, *Can nuclear structure be revealed in a reduced model space?* (2014).

Weichuan Li, *Algebraic collective model and its application to core quasiparticle coupling* (2016). Coadvised with S. Frauendorf.

Chrysovalantis Constantinou, *Natural orbitals for the no-core configuration interaction approach* (2017).

Anna E. McCoy, *Ab initio multi-irrep symplectic no-core configuration interaction calculations* (2018).

DOE Office of Science Graduate Student Research (SCGSR) Award (2015).

Notre Dame Center for Research Computing Award for Computational Sciences and Visualization (2018).

Patrick J. Fasano, *Ab initio nuclear structure and electroweak properties from chiral effective field theory* (2023).

DOE Office of Science Graduate Student Research (SCGSR) Award (2020).

Notre Dame Center for Research Computing CRC Director's Award for Computational Sciences and Visualization (2023).

Jakub Herko, *Microscopic calculations of nucleon-nucleus scattering and structure of single-nucleon halo nuclei in a symmetry-adapted framework* (2018–, in progress).

Zhou Zhou, *Isospin mixing calculations in p-shell nuclei* (2018–, in progress).

Shwetha Vittal (2022–, in progress).

Undergraduate honors theses

Mitch A. McNanna, *Natural orbitals for a two particle relative interaction in one dimension* (2015).

Alexa I. Rakoski, *Developing integration and extrapolation methods for no-core configuration interaction calculations* (2015).

Notre Dame Physics Undergraduate Research Award (2015) shared by McNanna and Rakoski.

Taylor M. Hernandez, *A greedy algorithm for expediting the convergence of a nuclear many-body Hamiltonian* (2019).

Research Experiences for Undergraduates (REU) summer research mentorship

Anna E. McCoy (Grinnell College, 2009).
Ke Cai (Bard College, 2010).
James F. St. Germaine-Fuller (Grinnell College, 2014).
Abraham R. Flores (Michigan State University, 2016).
Julie Butler (Erskine College, 2017).
Robert J. Power (University College Cork, 2018).
Isabella M. Zane (Texas A&M University, 2020).
Colin V. Coane (University of Southern California, 2021).

External Support

External funding

Nuclear properties at extreme density, temperature, spin, and isospin
US Department of Energy, Office of Science, Grant Number DE-FG02-95ER40934. 2007–2010, 2010–2013, 2013–2016, 2016–2018, 2018–2021, 2021-2024.

Symmetries in the nuclear many-body problem: Conquering the computational scale explosion
Cottrell Scholar Award, Research Corporation for Science Advancement, 2011–2014.

> The Cottrell Scholar Awards have been presented annually since 1994 by the Research Corporation for Science Advancement (RCSA), America's first foundation dedicated wholly to science. The awards honor outstanding early career scientists in the physical sciences for leadership in integrating science teaching and research at leading U.S. research universities. The Cottrell Scholar program is highly competitive, with an average award rate of 10%.

External computing awards

***Ab initio* nuclear structure**
Computing award, National Energy Research Scientific Computing Center (US Department of Energy). Allocation Years 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023.

PUBLICATIONS AND PRESENTATIONS

REFEREED PUBLICATIONS

including articles, refereed conference proceedings contributions, and invited book chapters

(a) Experimental[1]

1. **$B(E2)$ values and phase coexistence in ^{152}Sm**
   N. V. Zamfir, R. F. Casten, **M. A. Caprio**, C. W. Beausang, R. Krücken, J. R. Novak, J. R. Cooper, G. Cata-Danil, and C. J. Barton, Phys. Rev. C **60**, 054312 (1999)

2. **Evidence for superdeformation in ^{149,150}Dy: Onset of the $Z = 66$ deformed shell closure?**
   D. E. Appelbe, C. W. Beausang, C. J. Barton, **M. A. Caprio**, R. F. Casten, J. Cederkäll, J. R. Cooper, R. Krücken, J. R. Novak, N. V. Zamfir, and Z. Wang, Phys. Rev. C **61**, 037303 (2000)

3. **The YRAST Ball array**
   C. W. Beausang, C. J. Barton, **M. A. Caprio**, R. F. Casten, J. R. Cooper, R. Krücken, B. Liu, J. R. Novak, Z. Wang, M. Wilhelm, A. N. Wilson, N. V. Zamfir, and A. Zilges, Nucl. Instrum. Meth. A **452**, 431 (2000)

4. **Nuclear structure of ^{196}Au: More evidence for its supersymmetric description**
   J. Gröger, J. Jolie, R. Krücken, C. W. Beausang, **M. A. Caprio**, R. F. Casten, J. Cederkäll, J. R. Cooper, F. Corminboeuf, L. Genilloud, G. Graw, C. Günther, M. de Huu, A. I. Levon, A. Metz, J. R. Novak, N. Warr, and T. Wendel, Phys. Rev. C **62**, 064304 (2000)

5. **Chiral doublet structures in odd-odd $N = 75$ isotones: Chiral vibrations**
   K. Starosta, T. Koike, C. J. Chiara, D. B. Fossan, D. R. LaFosse, A. A. Hecht, C. W. Beausang, **M. A. Caprio**, J. R. Cooper, R. Krücken, J. R. Novak, N. V. Zamfir, K. E. Zyromski, D. J. Hartley, D. L. Balabanski, J.-Y. Zhang, S. Frauendorf, and V. I. Dimitrov, *Letter*, Phys. Rev. Lett. **86**, 971 (2001)

6. **Mass measurements of ^{70}Se, ^{71}Se, ^{72}Br, and ^{73}Br**
   B. E. Tomlin, C. J. Barton, N. V. Zamfir, **M. A. Caprio**, R. L. Gill, R. Krücken, J. R. Novak, J. R. Cooper, K. E. Zyromski, G. Cata-Danil, C. W. Beausang, A. Wolf, N. A. Pietralla, H. Newman, J. Cederkäll, B. Liu, Z. Wang, R. F. Casten, and D. S. Brenner, Phys. Rev. C **63**, 034314 (2001)

7. **Evidence for chiral symmetry breaking in ^{136}Pm and ^{138}Eu**
   A. A. Hecht, C. W. Beausang, K. E. Zyromski, D. L. Balabanski, C. J. Barton, **M. A. Caprio**, R. F. Casten, J. R. Cooper, D. J. Hartley, R. Krücken, D. Meyer, H. Newman, J. R. Novak, E. S. Paul, N. Pietralla, A. Wolf, N. V. Zamfir, J.-Y. Zhang, and F. Dönau, *Letter*, Phys. Rev. C **63**, 051302(R) (2001)

8. **Two-phonon γ-vibrational strength in osmium nuclei**
   C. Y. Wu, D. Cline, A. B. Hayes, M. W. Simon, R. Krücken, J. R. Cooper, C. J. Barton, C. W. Beausang, C. Bialik, **M. A. Caprio**, R. F. Casten, A. A. Hecht, H. Newman, J. Novak, N. Pietralla, K. Zyromski, and N. V. Zamfir, Phys. Rev. C **64**, 014307 (2001)

[1] Publications are listed as Experimental or Theoretical, based on the principal nature of my contribution.

9. **Lifetimes in neutron-rich fission fragments using the differential recoil distance method**
R. Krücken, W.-T. Chou, J. R. Cooper, C. W. Beausang, C. J. Barton, **M. A. Caprio**, R. F. Casten, A. A. Hecht, J. R. Novak, N. Pietralla, A. Wolf, and N. V. Zamfir, Phys. Rev. C **64**, 017305 (2001)

10. **High-spin states in $^{203}\mathrm{Rn}$**
H. Newman, J. R. Novak, C. W. Beausang, C. J. Barton, **M. A. Caprio**, R. F. Casten, J. R. Cooper, A. A. Hecht, R. Krücken, N. Pietralla, A. Wolf, N. V. Zamfir, J.-Y. Zhang, K. E. Zyromski, I. Birriel, and J. Saladin, Phys. Rev. C **64**, 027304 (2001)

11. **Coulomb excitation of the 2^+_{ms} state of $^{96}\mathrm{Ru}$ in inverse kinematics**
N. Pietralla, C. J. Barton, R. Krücken, C. W. Beausang, **M. A. Caprio**, R. F. Casten, J. R. Cooper, A. A. Hecht, H. Newman, J. R. Novak, and N. V. Zamfir, *Letter*, Phys. Rev. C **64**, 031301(R) (2001)

12. **Shape/phase coexistence in $^{156}\mathrm{Dy}$**
M. A. Caprio, N. V. Zamfir, R. F. Casten, C. J. Barton, C. W. Beausang, J. R. Cooper, A. A. Hecht, R. Krücken, H. Newman, J. R. Novak, N. Pietralla, A. Wolf, and K. E. Zyromski, *Refereed proceedings*, Rom. J. Phys. **46**, 41 (2001)

13. **Evidence for chiral symmetry in the mass $A \sim 130$ region**
C. W. Beausang, A. A. Hecht, K. E. Zyromski, D. Balabanski, C. J. Barton, **M. A. Caprio**, R. F. Casten, J. R. Cooper, D. Hartley, R. Krücken, J. R. Novak, N. V. Zamfir, J.-Y. Zhang, and F. Dönau, *Refereed proceedings*, Nucl. Phys. A **682**, 394c (2001)

14. **Lifetimes of quasideuteron configurations in the odd-odd $N = Z$ nucleus $^{50}_{25}\mathrm{Mn}_{25}$**
N. Pietralla, R. Krücken, C. J. Barton, C. W. Beausang, **M. A. Caprio**, R. F. Casten, J. R. Cooper, A. A. Hecht, J. R. Novak, N. V. Zamfir, A. Lisetskiy, and A. Schmidt, Phys. Rev. C **65**, 024317 (2002)

15. **$^{102}\mathrm{Pd}$: An $\mathrm{E}(5)$ nucleus?**
N. V. Zamfir, **M. A. Caprio**, R. F. Casten, C. J. Barton, C. W. Beausang, Z. Berant, D. S. Brenner, W. T. Chou, J. R. Cooper, A. A. Hecht, R. Krücken, H. Newman, J. R. Novak, N. Pietralla, A. Wolf, and K. E. Zyromski, Phys. Rev. C **65**, 044325 (2002)

16. **Coulomb excitation of radioactive $^{132,134,136}\mathrm{Te}$ beams and the low $B(E2)$ value of $^{136}\mathrm{Te}$**
D. C. Radford, C. Baktash, J. R. Beene, B. Fuentes, A. Galindo-Uribarri, C. J. Gross, P. A. Hausladen, T. A. Lewis, P. E. Mueller, E. Padilla, D. Shapira, D. W. Stracener, C.-H. Yu, C. J. Barton, **M. A. Caprio**, L. Coraggio, A. Covello, A. Gargano, D. J. Hartley, and N. V. Zamfir, *Letter*, Phys. Rev. Lett. **88**, 222501 (2002)

17. **$B(E2)$ values in $^{150}\mathrm{Nd}$ and the critical point symmetry $\mathrm{X}(5)$**
R. Krücken, B. Albanna, C. Bialik, R. F. Casten, J. R. Cooper, A. Dewald, N. V. Zamfir, C. J. Barton, C. W. Beausang, **M. A. Caprio**, A. A. Hecht, T. Klug, J. R. Novak, N. Pietralla, and P. von Brentano, *Letter*, Phys. Rev. Lett. **88**, 232501 (2002)

18. **Lifetime and $B(E2)$ values for the 3^+_1 level in $^{152}\mathrm{Sm}$**
N. V. Zamfir, H. G. Börner, N. Pietralla, R. F. Casten, Z. Berant, C. J. Barton, C. W. Beausang, D. S. Brenner, **M. A. Caprio**, J. R. Cooper, A. A. Hecht, M. Krtička, R. Krücken, P. Mutti, J. R. Novak, and A. Wolf, Phys. Rev. C **65**, 067305 (2002)

19. **Properties of the low-lying $K^\pi = 0^+$ excitations in ^{162}Er**
M. A. Caprio, N. V. Zamfir, R. F. Casten, G. C. Ball, K. P. Jackson, P.-A. Amaudruz, and J.-C. Thomas, Phys. Rev. C **66**, 014307 (2002)

20. **Physics with heavy neutron-rich RIBs at the HRIBF**
D. C. Radford, C. Baktash, A. Galindo-Uribarri, C. J. Gross, T. A. Lewis, P. E. Mueller, P. A. Hausladen, D. Shapira, D. W. Stracener, C.-H. Yu, B. Fuentes, E. Padilla, D. J. Hartley, C. J. Barton, **M. A. Caprio**, and N. V. Zamfir, *Refereed proceedings*, Eur. Phys. J. A **15**, 171 (2002)

21. **Shape changes and test of the critical-point symmetry X(5) in $N = 90$ nuclei**
A. Dewald, O. Möller, D. Tonev, A. Fitzler, B. Saha, K. Jessen, S. Heinze, A. Linnemann, J. Jolie, K. O. Zell, P. von Brentano, P. Petkov, R. F. Casten, **M. A. Caprio**, J. R. Cooper, R. Krücken, N. V. Zamfir, D. Bazzacco, S. Lunardi, C. Rossi-Alvarez, F. Brandolini, C. Ur, G. de Angelis, D. R. Napoli, E. Farnea, N. Marginean, T. Martinez, and M. Axiotis, *Refereed proceedings*, Eur. Phys. J. A **15**, 171 (2002)

22. **High-j proton and neutron alignments in γ-soft ^{101}Ru**
A. D. Yamamoto, P. H. Regan, C. W. Beausang, F. R. Xu, **M. A. Caprio**, R. F. Casten, G. Gürdal, A. A. Hecht, C. Hutter, R. Krücken, S. D. Langdown, D. Meyer, J. J. Ressler, and N. V. Zamfir, Phys. Rev. C **66**, 024302 (2002)

23. **Structure of low-lying states in ^{128}Ba from γ-γ angular correlations and polarization measurements**
A. Wolf, N. V. Zamfir, **M. A. Caprio**, Z. Berant, D. S. Brenner, N. Pietralla, R. L. Gill, R. F. Casten, C. W. Beausang, R. Krücken, K. E. Zyromski, C. J. Barton, J. R. Cooper, A. A. Hecht, H. Newman, J. R. Novak, and J. Cederkäll, Phys. Rev. C **66**, 024323 (2002)

24. **Low-spin structure of ^{156}Dy through γ-ray spectroscopy**
M. A. Caprio, N. V. Zamfir, R. F. Casten, C. J. Barton, C. W. Beausang, J. R. Cooper, A. A. Hecht, R. Krücken, H. Newman, J. R. Novak, N. Pietralla, A. Wolf, and K. E. Zyromski, Phys. Rev. C **66**, 054310 (2002)

25. **$B(E2)$ values from low-energy coulomb excitation at an isol facility: The $N = 80, 82$ Te isotopes**
C. J. Barton, **M. A. Caprio**, D. Shapira, N. V. Zamfir, D. S. Brenner, R. L. Gill, T. A. Lewis, J. R. Cooper, R. F. Casten, C. W. Beausang, R. Krücken, and J. R. Novak, *Letter*, Phys. Lett. B **551**, 269 (2003)

26. **Measurement of 2_1^+ level lifetimes in ^{162}Yb and ^{162}Er by fast electronic scintillation timing**
M. A. Caprio, N. V. Zamfir, E. A. McCutchan, R. F. Casten, Z. Berant, H. Amro, C. J. Barton, C. W. Beausang, D. S. Brenner, J. R. Cooper, R. L. Gill, G. Gürdal, A. A. Hecht, C. Hutter, R. Krücken, D. A. Meyer, J. R. Novak, N. Pietralla, P. H. Regan, and J. J. Ressler, Eur. Phys. J. A **16**, 177 (2003)

27. **Detailed γ-ray spectroscopy of ^{55}Cr and ^{56}Cr: Confirmation of the subshell closure at $N = 32$**
D. E. Appelbe, C. J. Barton, M. H. Muikku, J. Simpson, D. D. Warner, C. W. Beausang, **M. A. Caprio**, J. R. Cooper, J. R. Novak, N. V. Zamfir, R. A. E. Austin, J. A. Cameron, C. Malcolmson, J. C. Waddington, and F. R. Xu, Phys. Rev. C **67**, 034309 (2003)

28. **Mass measurement of ^{80}Y by β-γ coincidence spectroscopy**
C. J. Barton, D. S. Brenner, N. V. Zamfir, **M. A. Caprio**, A. Aprahamian, M. C. Wiescher, C. W. Beausang, Z. Berant, R. F. Casten, J. R. Cooper, R. L. Gill, R. Krücken, J. R. Novak, N. Pietralla, M. Shawcross, A. Teymurazyan, and A. Wolf, Phys. Rev. C **67**, 034310 (2003)

29. **Competing core and single particle excitations in the 2_1^+ state in ^{44}Ca**
M. J. Taylor, N. Benczer-Koller, G. Kumbartzki, T. J. Mertzimekis, S. J. Q. Robinson, Y. Y. Sharon, L. Zamick, A. E. Stuchbery, C. Hutter, C. W. Beausang, J. J. Ressler, and **M. A. Caprio**, *Letter*, Phys. Lett. B **559**, 187 (2003)

30. **SASSYER: An old instrument for new physics at Yale**
J. J. Ressler, R. Krücken, C. W. Beausang, J. M. D'Auria, H. Amro, R. F. Casten, **M. A. Caprio**, G. Gürdal, C. Hutter, A. A. Hecht, D. Meyer, M. Sciacchitano, and N. V. Zamfir, *Refereed proceedings*, Nucl. Instrum. Meth. B **204**, 141 (2003)

31. **Signature for vibrational to rotational evolution along the yrast line**
P. H. Regan, C. W. Beausang, N. V. Zamfir, R. F. Casten, J.-Y. Zhang, A. D. Yamamoto, **M. A. Caprio**, G. Gürdal, A. A. Hecht, C. Hutter, R. Krücken, S. D. Langdown, D. A. Meyer, and J. J. Ressler, *Letter*, Phys. Rev. Lett. **90**, 152502 (2003)

32. **$B(E2)$ values and the search for the critical point symmetry $X(5)$ in ^{104}Mo and ^{106}Mo**
C. Hutter, R. Krücken, A. Aprahamian, C. J. Barton, C. W. Beausang, **M. A. Caprio**, R. F. Casten, W.-T. Chou, R. M. Clark, D. Cline, J. R. Cooper, M. Cromaz, A. A. Hecht, A. O. Macchiavelli, N. Pietralla, M. Shawcross, M. A. Stoyer, C. Y. Wu, and N. V. Zamfir, Phys. Rev. C **67**, 054315 (2003)

33. **Collectivity at high spins in ^{156}Dy**
P. Petkov, A. Dewald, O. Möller, B. Saha, A. Fitzler, K. Jessen, D. Tonev, T. Klug, S. Heinze, J. Jolie, P. von Brentano, D. Bazzacco, C. Ur, E. Farnea, M. Axiotis, S. Lunardi, C. Rossi-Alvarez, G. de Angelis, D. R. Napoli, N. Marginean, T. Martinez, **M. A. Caprio**, and R. F. Casten, Phys. Rev. C **68**, 034328 (2003)

34. **Evidence for chiral symmetry breaking in ^{140}Eu?**
A. A. Hecht, C. W. Beausang, H. Amro, C. J. Barton, Z. Berant, **M. A. Caprio**, R. F. Casten, J. R. Cooper, D. J. Hartley, R. Krücken, D. A. Meyer, H. Newman, J. R. Novak, N. Pietralla, J. J. Ressler, A. Wolf, N. V. Zamfir, J.-Y. Zhang, and K. E. Zyromski, Phys. Rev. C **68**, 054310 (2003)

35. **Low spin states in ^{162}Yb and the $X(5)$ critical point symmetry**
E. A. McCutchan, N. V. Zamfir, **M. A. Caprio**, R. F. Casten, H. Amro, C. W. Beausang, D. S. Brenner, A. A. Hecht, C. Hutter, S. D. Langdown, D. A. Meyer, P. H. Regan, J. J. Ressler, and A. D. Yamamoto, Phys. Rev. C **69**, 024308 (2004)

36. **Transition from the seniority regime to collective motion**
J. J. Ressler, R. F. Casten, N. V. Zamfir, C. W. Beausang, R. B. Cakirli, H. Ai, H. Amro, **M. A. Caprio**, A. A. Hecht, A. Heinz, S. D. Langdown, E. A. McCutchan, D. A. Meyer, C. Plettner, P. H. Regan, M. J. S. Sciacchitano, and A. D. Yamamoto, Phys. Rev. C **69**, 034317 (2004)

37. **g factor of the 2_1^+ state of ^{164}Yb**
Z. Berant, A. Wolf, N. V. Zamfir, **M. A. Caprio**, D. S. Brenner, N. Pietralla, R. L. Gill, R. F. Casten, C. W. Beausang, R. Krücken, C. J. Barton, J. R. Cooper, A. A. Hecht, D. M. Johnson, J. R. Novak, H. Cheng, B. F. Albanna, and G. Gürdal, Phys. Rev. C **69**, 034320 (2004)

38. **Isomer decay tagging in the heavy nuclei: ^{210}Ra and ^{209}Ra**
J. J. Ressler, C. W. Beausang, H. Ai, H. Amro, **M. A. Caprio**, R. F. Casten, A. A. Hecht, S. D. Langdown, E. A. McCutchan, D. A. Meyer, P. H. Regan, M. J. S. Sciacchitano, A. Yamamoto, and N. V. Zamfir, Phys. Rev. C **69**, 034331 (2004)

39. **Test of calculations with single-particle density dependent pairing in ^{132}Te**
R. O. Hughes, N. V. Zamfir, R. F. Casten, D. C. Radford, C. J. Barton, C. Baktash, **M. A. Caprio**, A. Galindo-Uribarri, C. J. Gross, P. A. Hausladen, E. A. McCutchan, J. J. Ressler, D. Shapira, D. W. Stracener, and C.-H. Yu, *Letter*, Phys. Rev. C **69**, 051303(R) (2004)

40. **Possible assignment of chiral twin bands in ^{188}Ir**
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J. J. Ressler, R. Krücken, C. W. Beausang, J. M. D'Auria, H. Amro, R. F. Casten, **M. A. Caprio**, G. Gürdal, Z. Harris, C. Hutter, A. A. Hecht, D. Meyer, M. Sciacchitano, and N. V. Zamfir, in *Mapping the Triangle*, AIP Conf. Proc. No. 638, edited by A. Aprahamian, J. A. Cizewski, S. Pittel, and N. V. Zamfir (AIP, Melville, New York, 2002) p. 125

6. **g-factor of the 2_1^+ state of ^{164}Yb**
Z. Berant, A. Wolf, N. V. Zamfir, **M. A. Caprio**, D. S. Brenner, N. Pietralla, R. L. Gill, R. F. Casten, C. W. Beausang, R. Krücken, C. J. Barton, J. R. Cooper, A. A. Hecht, D. M. Johnson, J. R. Novak, H. Cheng, B. F. Albanna, and G. Gürdal, in *Mapping the Triangle*, AIP Conf. Proc. No. 638, edited by A. Aprahamian, J. A. Cizewski, S. Pittel, and N. V. Zamfir (AIP, Melville, New York, 2002) p. 233

7. **Experiments on chiral symmetry breaking in the mass 130 region**
A. A. Hecht, C. W. Beausang, H. Amro, Z. Berant, C. J. Barton, **M. A. Caprio**, R. F. Casten, J. R. Cooper, G. Gürdal, R. Krücken, D. Meyer, H. Newman, J. R. Novak, N. Pietralla, J. Ressler, M. Sciacchitano, N. V. Zamfir, and J.-Y. Zhang, in *Mapping the Triangle*, AIP Conf. Proc. No. 638, edited by A. Aprahamian, J. A. Cizewski, S. Pittel, and N. V. Zamfir (AIP, Melville, New York, 2002) p. 243

8. **Nuclear structure studies with neutron-rich RIBs at the HRIBF**
D. C. Radford, C. Baktash, J. R. Beene, B. Fuentes, A. Galindo-Uribarri, C. J. Gross, P. A. Hausladen, T. A. Lewis, P. E. Mueller, E. Padilla, D. Shapira, D. W. Stracener, C.-H. Yu, C. J. Barton, **M. A. Caprio**, L. Coraggio, A. Covello, A. Gargano, D. J. Hartley, and N. V. Zamfir, in *Frontiers of Nuclear Structure*, AIP Conf. Proc. No. 656, edited by P. Fallon and R. Clark (AIP, Melville, New York, 2003) p. 401

9. **The highs and lows of the $A = 100$ region: Vibration-to-rotation evolution in Mo and Ru isotopes**
P. H. Regan, A. D. Yamamoto, C. W. Beausang, N. V. Zamfir, R. F. Casten, J.-Y. Zhang, **M. A. Caprio**, G. Gürdal, A. A. Hecht, C. Hutter, R. Krücken, S. D. Langdown, D. Meyer, and J. J. Ressler, in *Frontiers of Nuclear Structure*, AIP Conf. Proc. No. 656, edited by P. Fallon and R. Clark (AIP, Melville, New York, 2003) p. 422

10. **Transition matrix elements in neutron-rich fission fragments**
R. Krücken, C. Hutter, J. R. Cooper, C. J. Barton, M. Shawcross, A. Aprahamian, C. W. Beausang, **M. A. Caprio**, R. F. Casten, W.-T. Chou, R. M. Clark, D. Cline, M. Cromaz, A. A. Hecht, A. O. Macchiavelli, N. Pietralla, M. A. Stoyer, C. Y. Wu, and N. V. Zamfir, in *Capture Gamma-Ray Spectroscopy and Related Topics*, edited by J. Kvasil, P. Cejnar, and M. Krtička (World Scientific, Singapore, 2003) p. 128

11. **Mass measurement of $^{80}\mathrm{Y}$ by β-γ coincidence spectroscopy**
D. S. Brenner, C. J. Barton, N. V. Zamfir, **M. A. Caprio**, A. Aprahamian, C. W. Beausang, Z. Berant, R. F. Casten, J. R. Cooper, R. L. Gill, R. Krücken, J. R. Novak, N. Pietralla, M. Shawcross, A. Teymurazyan, A. Wolf, and M. Wiescher, in *Capture Gamma-Ray Spectroscopy and Related Topics*, edited by J. Kvasil, P. Cejnar, and M. Krtička (World Scientific, Singapore, 2003) p. 343

12. **Nuclear structure studies with heavy neutron-rich RIBs at the HRIBF**
D. C. Radford, C. Baktash, J. R. Beene, B. Fuentes, A. Galindo-Uribarri, C. J. Gross, P. A. Hausladen, T. A. Lewis, P. E. Mueller, E. Padilla, D. Shapira, D. W. Stracener, C.-H. Yu, C. J. Barton, **M. A. Caprio**, L. Coraggio, A. Covello, A. Gargano, D. J. Hartley, and N. V. Zamfir, in *Frontiers of Collective Motions*, edited by H. Sagawa and H. Iwasaki (World Scientific, Singapore, 2003) p. 319

13. **Test of the critical point symmetry $\mathrm{X}(5)$ in $N = 90$ nuclei and $A \approx 180$ Os isotopes**
A. Dewald, O. Möller, D. Tonev, A. Fitzler, B. Saha, K. Jessen, S. Heinze, A. Linnemann, J. Jolie, K. O. Zell, P. von Brentano, P. Petkov, R. F. Casten, **M. A. Caprio**, N. V. Zamfir, R. Krücken, D. Bazzacco, S. Lunardi, C. Rossi-Alvarez, F. Brandolini, C. Ur, G. de Angelis, D. R. Napoli, E. Farnea, N. Marginean, T. Martinez, and M. Axiotis, in *Symmetries in Nuclear Structure*, edited by A. Vitturi and R. F. Casten (World Scientific, Singapore, 2004) p. 254

(b) Theoretical

14. **Finite well solution for the $\mathrm{E}(5)$ Hamiltonian**
M. A. Caprio, in *Computational and Group Theoretical Methods in Physics*, edited by J. Escher, O. Castaños, J. G. Hirsch, S. Pittel, and G. Stoitcheva (World Scientific, Singapore, 2004) p. 221

15. **Finite well solutions for the $\mathrm{E}(5)$ and $\mathrm{X}(5)$ Hamiltonians**
M. A. Caprio, in *Symmetries in Nuclear Structure*, edited by A. Vitturi and R. F. Casten (World Scientific, Singapore, 2004) p. 211

16. **The transition between axial and triaxial structure in the IBM-2**
M. A. Caprio, in *Nuclear Physics, Large and Small: International Conference on Microscopic Studies of Collective Phenomena*, AIP Conf. Proc. No. 726, edited by R. Bijker, R. F. Casten, and A. Frank (AIP, Melville, New York, 2004) p. 215

17. **Quantum phase transitions in two-fluid systems**
M. A. Caprio, in *Nuclei and Mesoscopic Physics*, AIP Conf. Proc. No. 777, edited by V. Zelevinsky (AIP, Melville, New York, 2005) p. 199

18. **Phase structure of the proton-neutron system**
M. A. Caprio, in *Symmetries and Low-Energy Phase Transitions in Nuclear Structure Physics*, edited by G. Lo Bianco (U. Camerino, 2006) p. 8

19. **Proton-neutron asymmetry in exotic nuclei**
M. A. Caprio, in *Opportunities with Exotic Beams*, Proceedings from the Institute for Nuclear Theory, Vol. 15, edited by T. Duguet, H. Esbensen, K. M. Nollett, and C. D. Roberts (World Scientific, Singapore, 2007) p. 81

20. **Nuclear structure and triaxiality with the algebraic collective model**
M. A. Caprio, D. J. Rowe, and T. A. Welsh, in *Capture Gamma-Ray Spectroscopy and Related Topics*, AIP Conf. Proc. No. 1090, edited by A. Blazhev, J. Jolie, N. Warr, and A. Zilges (AIP, Melville, New York, 2009) p. 534

21. **Generalized seniority in a major shell with realistic interactions**
M. A. Caprio, F. Q. Luo, K. Cai, Ch. Constantinou, and V. Hellemans, in *Beauty in Physics: Theory and Experiment*, AIP Conf. Proc. No. 1488, edited by R. Bijker *et al.* (AIP, Melville, New York, 2012) p. 212

22. **Tidal wave in $^{102}\mathrm{Pd}$: Rotating condensate of up to seven d-bosons**
S. Frauendorf, **M. A. Caprio**, and J. Sun, in *Capture Gamma-Ray Spectroscopy and Related Topics*, edited by P. E. Garrett and B. Hadinia (World Scientific, Singapore, 2013) p. 158

23. **Halo nuclei with the Coulomb-Sturmian basis**
M. A. Caprio, P. Maris, and J. P. Vary, in *Proceedings of the International Conference Nuclear Theory in the Supercomputing Era 2013*, edited by A. M. Shirokov and A. I. Mazur (Pacific National University, Khabarovsk, Russia, 2014) p. 325

24. ***Ab initio* no core shell model — Recent results and further prospects**
J. P. Vary, P. Maris, H. Potter, **M. A. Caprio**, R. Smith, S. Binder, A. Calci, J. Langhammer, R. Roth, H. M. Aktulga, E. Ng, C. Yang, D. Oryspayev, M. Sosonkina, and U. Catalyurek, in *Proceedings of the International Conference Nuclear Theory in the Supercomputing Era 2014*, edited by A. M. Shirokov and A. I. Mazur (Pacific National University, Khabarovsk, Russia, 2016) p. 154

25. **Quantum phase transitions and excited-state scaling in bosonic and fermionic pairing models**
M. A. Caprio, in *Symmetries and Order: Algebraic Methods in Many Body Systems*, AIP Conf. Proc. No. 2150, edited by R. Murayama (AIP, Melville, New York, 2019) p. 020016

26. **Robust *ab initio* predictions for nuclear rotational structure in the Be isotopes**
M. A. Caprio, P. J. Fasano, J. P. Vary, P. Maris, and J. Hartley, in *Proceedings of the International Conference Nuclear Theory in the Supercomputing Era 2018*, edited by A. M. Shirokov and A. I. Mazur (Pacific National University, Khabarovsk, Russia, 2019) p. 250

27. **Convergence in the symplectic no-core configuration interaction framework**
A. E. McCoy, **M. A. Caprio**, and T. Dytrych, in *Proceedings of the International Conference Nuclear Theory in the Supercomputing Era 2018*, edited by A. M. Shirokov and A. I. Mazur (Pacific National University, Khabarovsk, Russia, 2019) p. 293

INVITED TALKS

at conferences, professional meetings, international workshops, universities, and national laboratories

1. **Experiments on critical point nuclei**
Seminar, *Argonne National Laboratory*, Argonne, Illinois, March 2002

2. **Experiments on critical point nuclei**
International Conference on Nuclear Structure, Moran, Wyoming, May 2002

3. **Softness to deformation in transitional nuclear structure**
Seminar, *European Centre for Theoretical Studies in Nuclear Physics and Related Areas*, Villazzano (Trento), Italy, July 2003

4. **Quantum phase transitions in two-fluid systems**
Workshop on Nuclei and Mesoscopic Physics, East Lansing, Michigan, October 2004

5. **Phase structure of the proton-neutron system**
Seminar, *State University of New York at Stony Brook*, Stony Brook, New York, February 2005

6. **Dynamical symmetries in proton-neutron systems**
Gordon Research Meeting on Nuclear Chemistry, New London, New Hampshire, June/July 2005

7. **Phase structure of the proton-neutron system**
Symmetries and Low-Energy Phase Transitions in Nuclear Structure Physics, Camerino, Italy, October 2005

8. **Phase structure of the proton-neutron system**
Seminar, *Institute for Nuclear Theory, University of Washington*, Seattle, Washington, January 2006

9. **Phase structure of a two-fluid bosonic system**
   Seminar, *Rutgers University*, Piscataway, New Jersey, January 2006

10. **Proton-neutron asymmetry in nuclei**
    Seminar, *University of Notre Dame*, Notre Dame, Indiana, March 2006

11. **Collective nuclear structure and proton-neutron asymmetry**
    Colloquium, *Saint Mary's University*, Halifax, Nova Scotia, Canada, May 2006

12. **Proton-neutron asymmetry in exotic nuclei**
    Rare Isotope Accelerator Theory Meeting, Argonne, Illinois, April 2006

13. **Proton-neutron asymmetry in nuclear structure**
    Seminar, *University of York*, Heslington, York, United Kingdom, June 2006

14. **Excited state quantum phase transitions: Level density singularity and finite size scaling**
    Workshop on Shape Phase Transitions and Critical Point Phenomena in Nuclei, Athens, Greece, November 2006

15. **Nuclei, quantum phase transitions, and mesoscopic systems**
    Colloquium, *University of Notre Dame*, Notre Dame, Indiana, November 2006

16. **Nuclear quantum phase transitions**
    Excellence in Basic and Applied Nuclear Science, Monterey, California, June 2007

17. **Excited state quantum phase transitions in pairing systems**
    New Approaches in Nuclear Many-Body Theory, Seattle, Washington, October 2007

18. **Excited state quantum phase transitions in mesoscopic systems**
    Mesoscopic Theory Lecture, *Michigan State University*, East Lansing, Michigan, November 2007

19. **Excited state quantum phase transitions**
    Seminar, *Argonne National Laboratory*, Argonne, Illinois, December 2007

20. **Quantum phase transitions in finite many-body systems**
    American Chemical Society, New Orleans, Louisiana, April 2008

21. **Modern trends in physics education**
    Panelist, Yale Physics Alumni Meeting, *Today's Physics for Tomorrow's World*, New Haven, Connecticut, November 2008

22. **Algebraic methods for the Bohr Hamiltonian**
    Seminar, *Università degli Studi di Padova*, Padova, Italy, May 2009

23. **Nuclear structure with the algebraic collective model**
    Seminar, *University of York*, Heslington, York, United Kingdom, May 2009

24. **Phonon and multiphonon excitations by exact diagonalization of the Bohr Hamiltonian**
    Gordon Research Meeting on Nuclear Chemistry, New London, New Hampshire, June 2009

25. **Coupling coefficients for $\mathrm{SO}(5)$ with applications to nuclear physics**
International Symposium Symmetries in Science XIV, Bregenz, Austria, July 2009

26. **Geometric models: New results, opportunities, and challenges**
Workshop on Shape Phase Transitions and Critical Point Phenomena in Nuclei, İstanbul, Turkey, September 2009

27. **Algebraic methods for the geometric Hamiltonian**
Seminar, *Yale University*, New Haven, Connecticut, October 2009

28. **Algebraic methods for the nuclear geometric description**
APS April Meeting, Washington, District of Columbia, February 2010

29. **Symmetries in nuclei: Methods and applications**
Seminar, *Lawrence Livermore National Laboratory*, Livermore, California, August 2010

30. **Symmetries in nuclei: New methods and applications**
Seminar, *Michigan State University*, East Lansing, Michigan, November 2010

31. **Coupling coefficients for general subgroup chains**
Seminar, *Louisiana State University*, Baton Rouge, Louisiana, January 2011

32. **Symmetry methods for the nuclear shell model**
Seminar, *University of Wisconsin*, Madison, Wisconsin, March 2011

33. **Symmetry methods for the nuclear many-body problem**
Seminar, *University of Iowa*, Iowa City, Iowa, March 2011

34. **Symmetry methods for the nuclear shell model**
Seminar, *Iowa State University*, Ames, Iowa, March 2011

35. **Symmetries in nuclei: From isospin to rotations in five dimensions**
Seminar, *Grinnell College*, Grinnell, Iowa, April 2011

36. **Taming the nucleus: Symmetries and the computational scale explosion**
Colloquium, *Dartmouth College*, Hanover, New Hampshire, April 2011

37. **Symmetries in nuclei: New methods and applications**
APS April Meeting, Garden Grove, California, April/May 2011

38. **Quantum phase transitions in algebraic models**
Gordon Research Meeting on Nuclear Chemistry, New London, New Hampshire, June 2011

39. **Computational problem solving in the undergraduate physics major**
Cottrell Scholar Meeting, Tucson, Arizona, July 2011

40. **Taming the computational scale explosion in the nuclear many-body problem**
Seminar, *University of Notre Dame*, Notre Dame, Indiana, May 2012

41. **Generalized seniority in a major shell with realistic interactions**
Beauty in Physics: Theory and Experiment, Cocoyoc, Mexico, May 2012

42. **The no-core shell model with general radial bases**
Horizons of Innovative Theories, Experiments, and Supercomputing in Nuclear Physics, New Orleans, Louisiana, June 2012

43. **The Coulomb-Sturmian basis for the nuclear many-body problem**
Seminar, *Lawrence Livermore National Laboratory*, Livermore, California, July 2012

44. **The no-core shell model with general radial bases**
Seminar, *Lawrence Berkeley National Laboratory*, Berkeley, California, July 2012

45. **The Coulomb-Sturmian basis for the nuclear many-body problem**
Seminar, *Yale University*, New Haven, Connecticut, November 2012

46. **The no-core shell model with general radial bases**
Seminar, *Rutgers University*, Piscataway, New Jersey, December 2012

47. **Convergence of NCCI calculations for light p-shell nuclei with the Coulomb-Sturmian basis**
International Meeting on Nuclear Theory in the Supercomputing Era, Ames, Iowa, May 2013

48. **Halo nuclei with the Coulomb-Sturmian basis**
Seminar, *Lawrence Livermore National Laboratory*, Livermore, California, August 2013

49. **The Coulomb-Sturmian basis in *ab initio* no-core configuration interaction calculations**
Seminar, *Lawrence Berkeley National Laboratory*, Berkeley, California, August 2013

50. ***Ab initio* emergence of rotational nuclear structure**
Seminar, *Lawrence Berkeley National Laboratory*, Berkeley, California, July 2014

51. **Emergence of rotation in *ab initio* no-core configuration interaction calculations**
Seminar, *Lawrence Livermore National Laboratory*, Livermore, California, July 2014

52. ***Ab initio* emergence of rotational nuclear structure**
General Seminar, *Institutul Naţional de Fizică şi Inginerie Nucleară Horia Hulubei*, Bucureşti-Măgurele, Romania, August 2014

53. **Emergence of rotational collectivity in *ab initio* no-core configuration interaction calculations**
Advanced Many-Body and Statistical Methods in Mesoscopic Systems II, Braşov, Romania, September 2014

54. **The emergence of nuclear rotational excitations**
Colloquium, *University of Oklahoma*, Norman, Oklahoma, November 2014

55. **Emergence of nuclear rotation in *ab initio* calculations**
Seminar, *Yale University*, New Haven, Connecticut, December 2014

56. ***Ab initio* emergence of rotational nuclear structure**
Seminar, *Michigan State University*, East Lansing, Michigan, March 2015

57. ***Ab initio* emergence of rotation in nuclei**
Seminar, *Peking University*, Beijing, China, July 2015

58. ***Ab initio* emergence of rotation in nuclei**
Seminar, *Huzhou University*, Huzhou, China, July 2015

59. ***Ab initio* emergence of rotation in nuclei**
Seminar, *Shandong University*, Weihai, China, July 2015

60. **Nuclear rotation in *ab initio* no-core configuration interaction calculations**
CUSTIPEN workshop, *Advances in computations of nuclear structure and nuclear forces*, Beijing, China, August 2015

61. ***Ab initio* emergence of rotation in the Be isotopes**
CUSTIPEN workshop, *Properties of exotic nuclei and asymmetric nuclear matter*, Lanzhou, China, August 2015

62. ***Ab initio* emergence of rotation in light nuclei**
Seminar, *Lawrence Livermore National Laboratory*, Livermore, California, October 2015

63. ***Ab initio* emergence of rotation in light nuclei**
Seminar, *Ohio State University*, Columbus, Ohio, November 2015

64. ***Ab initio* emergence of rotation in light nuclei**
Seminar, *Ohio University*, Athens, Ohio, November 2015

65. **Nuclei from scratch: *Ab initio* calculations and the emergence of rotation**
Colloquium, *Illinois State University*, Normal, Illinois, November 2015

66. ***Ab initio* structure of light nuclei with a natural orbital basis**
Seminar, *Nuclear Physics Institute, Czech Academy of Sciences*, Řež, Czech Republic, September 2016

67. **Natural orbitals for *ab initio* calculations of light nuclei**
Seminar, *Institut für Kernphysik, Technische Universität Darmstadt*, Darmstadt, Germany, September 2016

68. **Natural orbitals for *ab initio* calculations**
CUSTIPEN-IMP-PKU Workshop on Physics of Exotic Nuclei, Huizhou, China, December 2016

69. **Symplectic no-core configuration interaction framework for *ab initio* nuclear structure**
Advanced many-body and statistical methods in mesoscopic systems, Buşteni, Romania, September 2017

70. **Nuclei from scratch: *Ab initio* nuclear structure and emergent symmetries**
Seminar, *Vietnam National University, University of Science*, Hà Nội, Vietnam, October 2017

71. **Symplectic no-core configuration interaction framework for *ab initio* nuclear structure**
Seminar, *TRIUMF*, Vancouver, British Columbia, October 2017

72. **Symplectic no-core configuration interaction framework for *ab initio* nuclear structure**
Seminar, *Michigan State University*, East Lansing, Michigan, November 2017

73. **Symplectic symmetry in *ab initio* nuclear structure**
Seminar, *Lawrence Berkeley National Laboratory*, Berkeley, California, February 2018

74. ***Ab initio* nuclear structure and symplectic symmetry**
Seminar, *Institute of Physics, Academia Sinica*, Taipei, Taiwan, May 2018

75. **Symplectic symmetry in *ab initio* nuclear structure**
Seminar, *East China Normal University*, Shanghai, China, May 2018

76. **Symplectic symmetry in *ab initio* nuclear structure**
Seminar, *Peking University*, Beijing, China, June 2018

77. **Symplectic symmetry in *ab initio* nuclear structure**
Notre Dame-China Symposium on Exotic Nuclear Structures, Beijing, China, June 2018

78. **Symplectic no-core configuration interaction framework for *ab initio* nuclear structure**
FRIB Theory Alliance workshop, *From Bound States to the Continuum: Connecting Bound State Calculations with Scattering and Reaction Theory*, East Lansing, Michigan, June 2018

79. **Excited state quantum phase transitions in two-level systems**
Symmetries and Order: Algebraic Methods in Many Body Systems, New Haven, Connecticut, October 2018

80. **Predictions for nuclear rotational structure from *ab initio* calculations**
International Meeting on Nuclear Theory in the Supercomputing Era, Daejeon, Republic of Korea, November 2018

81. **Emergent dynamical symmetry in the nuclear many-body system from its *ab initio* description**
Seminar, *University of Maryland*, College Park, Maryland, October 2019

82. **Intrinsic operators and matrix elements for no-core *ab initio* calculations**
Lecture/tutorial, NCSM/NCCI Yesterday, Today, and Tomorrow, *Iowa State University*, Ames, Iowa (Virtual), February 2022

83. **Robust *ab initio* prediction of nuclear electric quadrupole observables by calibration to experiment**
Seminar, NCSM/NCCI Yesterday, Today, and Tomorrow, *Iowa State University*, Ames, Iowa (Virtual), May 2022

84. **Seize the moment (or radius): What to do when your (long-range) observables don't converge?**
Seminar, *Institute for Nuclear Theory, University of Washington*, Seattle, Washington, May 2022

85. **David Rowe, nuclear symmetries, and the "fundamental theorem of nuclear physics"**
A Symposium Celebrating the Life and Work of Prof. David Rowe, Toronto, Ontario, Canada, June 2022

86. **Making intractable observables tractable: *Ab initio* $E2$ predictions by calibration to ground state properties**
Seminar, *Lawrence Livermore National Laboratory*, Livermore, California, July 2022

87. **Nuclei from scratch: *Ab initio* emergence of rotation and dynamical symmetry**
Colloquium, *University of North Carolina*, Chapel Hill, North Carolina, November 2022

88. ***Ab initio* $E2$ strengths by calibration to ground state properties**
Seminar, *Washington University in St. Louis*, St. Louis, Missouri, November 2022

89. **Seize the moment (or radius): What to do when your (long-range) observables don't converge?**
Seminar, *Facility for Rare Isotope Beams, Michigan State University*, East Lansing, Michigan, January 2023

90. ***Ab initio* emergence of rotation and dynamical symmetry in nuclei**
Colloquium, *Argonne National Laboratory*, Argonne, Illinois, March 2023

91. ***Ab initio* shape coexistence, $E0$ transitions, and related phenomena**
International workshop, *Shape Coexistence, $E0$ Transitions, and Related Topics*, Guelph, Ontario, Canada, May 2023

92. **Meaningful comparison of $E2$ observables and radii with FRIB experiment**
FRIB Theory Alliance workshop, *Theoretical Justifications and Motivations for Early High-Profile FRIB Experiments*, East Lansing, Michigan, May 2023

93. **Nuclear rotation and shape coexistence from first principles**
International Meeting on Nuclear Theory in the Supercomputing Era, Lanzhou, China (Virtual), June 2023

94. **Shape coexistence and $E0$ transitions in light nuclei from *ab initio* theory**
Seminar, *Lawrence Livermore National Laboratory*, Livermore, California, August 2023

95. **Seize the moment (or radius): What to do when your (long-range) observables don't converge?**
Seminar, *Laboratory for Nuclear Science, Massachusetts Institute of Technology*, Cambridge Massachusetts, August 2023

96. ***Ab initio* intruder states, electric monopole transitions, and shape mixing**
International workshop, *Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects*, Sofia, Bulgaria (Virtual), September 2023

97. **No-core shell model and shell model**
Invited contribution to overview talk, *The Past, Present, and Future of Nuclear Structure Theory in the FRIB Era*, East Lansing, Michigan, September 2023

Contributed Talks (selected recent)

Predictions for nuclear rotational structure from *ab initio* calculations
International workshop, *Progress in Ab Initio Techniques in Nuclear Physics*, Vancouver, British Columbia, Canada, February/March 2019

Shape coexistence and shape invariants
International workshop, *Progress in Ab Initio Techniques in Nuclear Physics*, Vancouver, British Columbia, Canada, March 2020

Shape coexistence, shape invariants, and *ab initio* rotation in ^{10}Be
APS Division of Nuclear Physics, New Orleans, Louisiana (Virtual), October/November 2020

Symmetries as a framework for understanding signatures of collectivity and shape coexistence
International workshop, *Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects*, Sofia, Bulgaria (Virtual), September 2021

Quadrupole moments and proton-neutron structure in p-shell mirror nuclei
APS Division of Nuclear Physics, Boston, Massachusetts (Virtual), October 2021

Correlated observables and dimensionless ratios
International workshop, *Progress in Ab Initio Nuclear Theory*, Vancouver, British Columbia, Canada, February/March 2023

Intruder states, shape mixing, and the $2 \to 0$ transition in ^{14}C
Thirty-Fourth Midwest Theory Get-Together, Argonne, Illinois, September 2023

October 14, 2023