Curriculum Vitae

Vincent G.J. Rodgers

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http://www.physics.uiowa.edu/~vrodgers/

EDUCATIONAL AND PROFESSIONAL HISTORY

- Higher Education
  - Syracuse University, Syracuse, N.Y 1982-1985, Theoretical Particle Physics Ph.D. Aug. 1985
  - Syracuse University, Syracuse, N.Y. 1980-1982, Theoretical Particle Physics M.S. Aug. 1982
  - University of Dayton, Dayton, Ohio 1976-1980, Physics major, Math minor, Computer Science minor B.S. Apr. 1980
- Professional and Academic Positions
  - Professor, August 2004 - Present
  - Director of Graduate Studies, August 2019 – July 2024
  - Co-Director, Iowa Science Academy, 2005-2024
  - Associate Professor, June 1995 - July 2004 The University of Iowa, Iowa City, IA
  - Assistant Professor, Sept 1989 - June 1995 The University of Iowa, Iowa City, IA

- Postdoctoral Research Associate, Sept 1987 - Sept 1989
  Institute for Theoretical Physics, State University of New York, Stony Brook, NY
  Now: C.N. Yang Institute for Theoretical Physics
  Stony Brook University
- Postdoctoral Research Associate, Sept 1985 - Sept 1987
  Institute for Fundamental Theory, University of Florida, Gainesville, FL
- Research Assistant and Numerical Analyst, Jan 1979 - Sept 1980
  University of Dayton Research Institute and Wright Paterson Air Force Base

- Other Positions
  - Founder and Organizer, Café Scientifique Iowa City 2005-2020
  - Hawkeyes on Science Co-Coordinator 2003-Present
  - MESA/Iowa City Community School District Faculty Participant 1994-2015
  - Graduate Faculty of the Applied Mathematics and Computational Sciences

- Honors and Awards
  - Fellow of the American Physical Society 2020
  - President and Provost Award For Teaching Excellence 2019
  - UI Faculty Development Award, Spring 2025
  - UI Faculty Development Award, Spring 2016
  - CLAS Outreach and Public Engagement Award, 2014
  - CLAS Diversity Award, 2011
  - UI Faculty Development Award, Spring 2010
  - UI Faculty Development Award, Fall 2002
  - Fellow of the National Society of Black Physicists, March 2001
  - Eduard Bouchet Award, National Conference of Black Physics Students, MIT 1997
  - UI Faculty Development Award, Fall 1996
  - Outstanding Teaching Certificate, The University of Iowa Council of Teaching 1994
  - Stellar Achievement Award, St. Louis, American Newspaper 1992
  - Old Gold Summer Fellow, University of Iowa, 1990-1991
  - Outstanding Graduate Research Award, Sigma Xi, Syracuse Chapter 1985
  - Chester Davis Fellowship, University of Indiana, 1985

- Other Acknowledgments
    - Quality of Life Research Center: exemplary mentor Award for supporting Prof. Christina Othon
    - Youth Service Award Alpha Phi Alpha Fraternity Rock Island – 2006, 2007, 2010, 2012, 2015, 2016, 2018
- Memberships
    - American Mathematical Society, since 2025
    - Mathematical Association of America, since 2025
    - Sigma Xi, since 2020
    - American Physical Society (APS), since 1985
    - Graduate Faculty of Applied Mathematics and Computational Sciences, UI
    - American Association of Physics Teachers (AAPT), since 2004
    - National Society of Black Physicists (NSBP), since 1990
- Research Interests
    - Theoretical Particle/String Physics
    - Mathematical Physics
    - Theoretical Gravitation and Cosmology

SCHOLARSHIP

Refereed Publications (Authors are ordered alphabetically)

Graduate *, Undergraduate **

1. "Diffeomorphism Radiative Degrees of Freedom of Thomas-Whitehead Gravity", by Fiedorowicz**, Owen and Grover*, Tyler C. and Rodgers, V. G. J. and Zenger**, Hazal, Phys. Rev. D, 111 (2025)
2. "From Virasoro Algebra to Cosmology," In *Particles, Fields and Topology: A Celebration of A.P. Balachandran* by V. G. J. Rodgers, World Scientific Publications (2023), ISBN: 978-981-127-042-0
3. C. M. Sánchez*, V. G. J. Rodgers and P. Vecera*, "Graded extension of Thomas-Whitehead gravity," Phys. Rev. D 106, no.8, 084065 (2022) doi:10.1103/PhysRevD.106.084065
4. Prineas, J. and Bogh*, Cassandra and Muhowski, Aaron and Nelson, Matthew and Rodgers, Vincent, "Measurement of Recombination Mechanisms in Mid-Infrared W-Superlattices", Optical Materials Express, Volume 12 (2022), doi : 10.1364/OME.472068
5. "General structure of Thomas −Whitehead gravity," by S. Brensinger*, K. Heitritter*, V. G. J. Rodgers and K. Stiffler, Phys. Rev. D 103, no.4, 044060 (2021)
6. "Dark Energy From Dynamical Projective Connections," by S. Brensinger*, K. Heitritter*, V. G. J. Rodgers, K. Stiffler and C. A. Whiting, Class. Quant. Grav. 37, no.5, 055003 (2020)
7. "Dynamical Projective Curvature in Gravitation," by S. Brensinger and V. G. J. Rodgers, Int. J. Mod. Phys. A 33, no.36, 1850223 (2019)
8. "Supergravity solutions with AdS4 from non-Abelian T-dualities," by L. A. Pando Zayas, V. G. J. Rodgers and C. A. Whiting*, JHEP 1602, 061 (2016)
9. "An Extended Detailed Investigation of First and Second Order Supersymmetries for Off-Shell N = 2 and N = 4 Supermultiplets," by S. J. Gates, Jr., J. Parker**, V. G. J. Rodgers, L. Rodriguez* and K. Stiffler*, Symmetry 7, no. 2, 1080 (2015).
10. "Type IIB supergravity solutions with AdS5 from Abelian and non-Abelian T dualities," by N. T. Macpherson, C. Nez, L. A. Pando Zayas, V. G. J. Rodgers

and C.A. Whiting*, JHEP 1502, 040 (2015)

11. Holographic k-string Tensions in Higher Representations and Luescher Term Universality," by B. Button*, S. J. Lee**, L. A. Pando Zayas, V. G. J. Rodgers and K. Stiffler*, Phys. Rev. D 87, 126005 (2013) arXiv:1209.5149 [hep-th].

12. "4D, N = 1 Supersymmetry Genomics (II)," by S. J. Gates, Jr., J. Hallett**, J. Parker**, V. G. J. Rodgers and K. Stiffler*, JHEP 1206, 071 (2012) [arXiv:1112.2147 [hep-th]].

13. "Toward NS5 Branes on the Resolved Cone over Yp,q ," by E. Caceres, M. N. Mahato, L. A. Pando Zayas, V. G. J. Rodgers, Phys. Rev. D 83, 066008 (2011)

14. "4D, N = 1 Supersymmetry Genomics (I)," by S. J. Gates, J. Gonzales**, B. MacGregor**, J. Parker**, R. Polo-Sherk**, V. G. J. Rodgers and L. Wassink**, JHEP 0912, 008 (2009) [arXiv:0902.3830 [hep-th]]

15. "Tensions and Luscher Terms for (2+1)-dimensional k-strings from Holographic Models," by C. A. Doran*, L. A. Pando Zayas, V. G. J. Rodgers and K. Stiffler*, *JHEP* 0911, 064 (2009) [arXiv:0907.1331 [hep-th]]

16. "Luscher Term for k-string Potential from Holographic One Loop Corrections," by L. A. Pando Zayas,
V. G. J. Rodgers and K. Stiffler*, arXiv:0809.4119 *JHEP* 0812, 036 (2008)

17. "General Coordinate Transformations as the Origins of Dark Energy," by V. G. J. Rodgers and T. Yasuda*, arXiv:hep-th/0601113. *Int. Jour. Mod. Phys A*22, 749 (2007)

18. "Short Distance Expansion from the Dual Representation of Infinite Dimensional Lie Algebras," by
R. J. Gates, W. D. Linch*, J. Phillips* and V. G. J. Rodgers , arXiv:hep-th/0211021, *Comm. of Math. Phys.*246 333-358 (2004)

19. "From 'Diffeomorphisms to Dark Energy", by V.G.J. Rodgers and Takeshi Yasuda*, *Mod. Phys. Lett.* A 18 2467-2474 (2003)

20. "Chiral Supergravitons Interacting with a 0-Brane N-Extended NSR Supervirasoro Group" by A. Boveia**, Bjorg A. Larson**, V.G.J. Rodgers, S.James Jr. Gates, W.D. Linch*, III, J.A. Phillips*, Dagny M. Kimberly**, *Phys. Lett.* B 529, 222-232 (2002)

21. "Supergravitons Interacting with the Supervirasoro Group", by S.James Gates, Jr. and V.G.J. Rodgers,
Phys. Lett. B 512, 189-196 (2001)

22. "The Image of Self Dual QCD Strings in Four Dimensions", by Bob Bacus* and V.G.J. Rodgers, *Comp. Phys. Commun.* 136, 37-53 (2001)

23. "Irreducible Decomposition of 10 D Chiral Sigma Matrices", by S. James Gates, Jr., B. Radak, V.G.J. Rodgers, *Comp. Phys. Commun.* 136 173-181, (2001)

24. "Superspace Geometrical Realization of the *N*-Extended Super Virasoro Algebra and its Dual" by C. Curto**, S. James Gates, Jr. and V.G.J. Rodgers, *Phys. Letts.* B480 337-347, (2000)

25. "Interaction of a String-Inspired Graviton" by Thomas Branson, V.G.J. Rodgers, and Takeshi Yasuda* *Inter. Jour. Mod. Phys.*A 15, 3549-3562 (2000)

26. "Type B/O Bosonic String Sigma Models." by By S.J. Gates, Jr. and V.G.J. Rodgers, *Phys.Lett.*B405, 71-78 (1997)

27. "Yang-Mills, Gravity and Symmetries of String Theories," by Thomas Branson, R.P. Lano* and V. G. J. Rodgers, *Phys. Lett.*B412, 253-258 (1997)

28. "Evidence for Complex Subleading Exponents from the High-Temperature Expansion of the Hierarchical Ising Model," by Y. Meurice, G. Ordaz and V. G. J. Rodgers, *Phys. Rev. Lett.*75, 4555-4458 (1995)

29. "A Truly Crazy Idea About Type-IIB Supergravity and Heterotic Sigma Models," by S.J. Gates Jr. and V.G.J. Rodgers, *Phys. Lett.*B357, 552-557 (1995)

30. "A Study of Fermions on a Cylinder Coupled to Gauge and Gravitational Fields," by Ralph Lano* and V.G.J. Rodgers, *Nucl. Phys. B* B437, 45-59 (1995)

31. "A 2D Inspired 4D Theory of Gravity," by V.G.J. Rodgers, *Phys. Lett.* B336, 343-346 (1994)

32. "A Numerical Study of the Hierarchical Ising Model: High Temperature Versus Epsilon Expansion," by Y. Meurice, G. Ordaz and V.G.J. Rodgers, *Jour. Stat. Phys.*17, 607-626 (1994)

33. "Applications of *W*-algebras to BF Theories, QCD, and 4D Quantum Gravity," by Ralph Lano* and V.G.J. Rodgers, *Mod. Phy. Lett.* A7, 1725-1736 (1992)

34. "QCD Instantons and 2D Surfaces", by V.G.J. Rodgers, *Mod. Phy. Lett.* A7, 1001-1008 (1992)

35." W_∞ and Effective Actions for Self-Dual Einstein Gravities," by V.G.J. Rodgers, *Mod. Phys. Lett.* A6, 1893-1990 (1991).

36. "A W_2 Effective Action," by V.G.J. Rodgers, *Mod. Phys. Lett.* A6, 1045-1052 (1991)

37. "The Method of Coadjoint Orbits Applied to the Super Virasoro Algebra," by G.W. Deluis*, P. van Nieuwenhuizen, and V.G.J. Rodgers, *Inter. Journ. Mod. Phys.* A5, 3943-3984 (1990)

38. "From Co-Adjoint Orbits to Scale Invariant *WZNW* Type Models and $2-D$ Quantum Gravity," by Balram Rai* and V.G.J. Rodgers, *Nucl. Phys.* B341, 119-133 (1990)

39. "The Superstring, Diff S1/S1 and Holomorphic Geometry," by D. Harari, D.K. Hong, P. Ramond, and V.G.J. Rodgers, *Nucl. Phys.* B294, 556-572 (1987)

40. "The Explicit Gauge Invariance of the Free Closed Strings and Open Fermionic Strings," by P. Ramond, V.G.J. Rodgers, and R.R. Viswanathan, *Nucl. Phys.* B293, 293-316 (1987)

41. "Algebraic Structure of Open String Interaction," by P. Ramond and V.G.J. Rodgers *Phys. Rev.* D34 2352-2359 (1986)

42. "Gauge Invariant Field Theory of Free Strings," by D. Pfeffer, P. Ramond, and V.G.J. Rodgers, *Nucl. Phys.* B276 131-172, (1986)

43. "Quantum Aspects of Topological Solitons," by V.G.J. Rodgers, UMI 86-03772 (microfiche), August 1985, Ph.D. Thesis

44. "Dibaryons as Chiral Solitons," by A.P. Balachandran, F. Lizzi, and V.G.J. Rodgers *Nucl. Phys.* B256 525-556, (1985)

45. "A Doubly Strange Dibaryon in the Chiral Model," by A.P. Balachandran, A. Barducci, F. Lizzi, V.G.J. Rodgers, and A. Stern *Phys. Rev. Lett.* 52 887-890, (1984)

46. "Topological Symmetry Breakdown in Nematics and He-3," by A.P. Balachandran, F. Lizzi, and V.G.J. Rodgers, *Phys. Rev. Lett.* 50 1818

47. "Self-Adjointness of the Dirac Hamiltonian in Point Instanton and Meron Fields," by F. Lizzi, and V.G.J. Rodgers, *Phys. Rev.* D30 442-446, (1984)

48. "Calculating a Relaxation Spectrum from Experimental Data via Quadratic Programming With and Without Regularization,"
by C.Y.-C. Lee, D.R. Wiff, and V.G.J. Rodgers,
Journal of Macromolecular Science, Physics Edition B19 212-225 (1981)

Conference and Technical Reports

1. "A Detailed Investigation of First and Second Order Supersymmetries for N = 2 and N = 4 Supermultiplets" by S. J. Gates, James Parker**, Leo Rodriguez*, V. G. J. Rodgers, and Kory Stiffler*, arXiv:1106.5475 [hep-th]

2. "A Wess-Zumino Action for the Courant Bracket," by X. Liu*, L. A. P. Zayas, V. G. J. Rodgers and L. Rodriguez*, arXiv:hep-th/0610021

3. "Yang-Mills, Gravity and 2D String Symmetries", by V.G.J. Rodgers, Conference Proceedings, Boston 1998 - Particles, Strings and Cosmology, 657-661, QCD 161:I69:1998

4. "Yang-Mills, Gravity and 2D String Symmetries", by V.G.J. Rodgers, Conference Proceedings, NSBP XXV Annual Day of Scientific Lectures and 21st Annual Meeting, Mar. 1998

5. "Chiral Symmetry and Skyrmion - Quark Mixing," by V.P. Nair and V.G.J. Rodgers, published in Proceedings of the Seventh Annual Montreal-Rochester-Syracuse-Toronto Meeting, May 1985

6. "Skyrmion Quark Mixing," by V.P. Nair and V.G.J. Rodgers June 1984. Published in Lewes Workshop 1984, 97-101 (QC174.26:W62:1984).

7. "Anomalous Symmetries and Induced Currents", by D. Karabali, V.P. Nair, and V.G.J. Rodgers, Print-85-0176 (IAS, Princeton), December 1984.

8. "A Restriction on Skyrmion - Fermion Couplings", by V.G.J. Rodgers and G. Sparano, SU-4228-321 (Syracuse U.), July 1985

9. "Symmetry Reduction in the Presence of Gut Monopoles", by F. Lizzi, V.P. Nair, and V.G.J. Rodgers, SU-4222-269 (Syracuse U.), September 1983

Publications Supervised

- "Chern-Simons Splitting of 2+1D Pure Yang-Mills Theory at Large Distances," by T. Yildirim, arXiv:1410.8593 [hep-th],.
- "Topologically Massive Yang-Mills Theory and Link Invariants," by T. Yildirim, Int. J. Mod. Phys. A 30, 1550034 (2015) arXiv:1311.1853 [hep-th]
- "Entropy and Temperature From Black-Hole/Near-Horizon-CFT Duality," by L. Rodriguez, T. Yildirim, Class. Quant. Grav. 27, 155003 (2010). [arXiv:1003.0026 [hep-th]].
- "A Near Horizon CFT Dual for Kerr-Newman-*AdS*," by B. K. Button, L. Rodriguez, C. A. Whiting, Int. J. Mod. Phys. A 26, 3077 (2011) [arXiv:1009.1661 [hep-th]].

Recent Presentations Supervised (Graduate* and Undergraduate**)

- *"The Diffeomorphism Field and Vanishing Hamiltonians in Quantum Gravity"*, by Salvatore Quaid*, Nuclear and Particle Physics Seminar, March 2025

- *"Deriving 2D Quantum Gravity"*, by Sal Quaid*, *Math Physics* Dec 2025

- Poster: "Geodesic Deviation and Thomas Whitehead Gravity", by Owen Fiedorowicz**, Tyler Grover* and Vincent Rodgers, Fall Undergraduate Research Festival, University of Iowa, Nov 2024
  (Awarded Andrew Nelson Poster Prize)

- Poster: "Geodesic Deviation and Thomas Whitehead Gravity", by Owen Fiedorowicz**, Tyler Grover* and Vincent Rodgers, Fall Undergraduate Research Festival, University of Iowa, Nov 2023

- Poster: "Geodesic Deviation and Thomas Whitehead Gravity", by Owen Fiedorowicz**, Tyler Grover* and Vincent Rodgers, Acevedo Poster Contest Feb 2024

- Poster: "Gravitational Orbits and Dark Matter Arising from String Theory", by Landen Freeman**, Eduardo Sandoval** and Vincent Rodgers, Fall Undergraduate Research Festival, University of Iowa, Nov 2024

- Poster: "Studying Dark Matter Through Black Hole Geodesics", by Connor McMillin**, Yihan Shen**, and Vincent Rodgers Summer Undergraduate Research Festival (SURC) 2024

- "*Anomalies in the Matter Measure*", by Nicholas Harshman*, Nuclear and Particle Physics, Nov, 2024

- "*Radiative Degrees of Freedom of Thomas-Whitehead Gravity*", by Tyler Grover*, Math. Physics Nov. 2024

- "*Quantum Thomas-Whitehead Projective Gravity in Two Dimensions*, by Salvatore Quaid*,* Nuclear and Particle Seminar, Mar 2024

- "*Symmetry Breaking in Projective Gauge Gravity*", by Michael Connolly*, University of Iowa, *Math. Physics,* 2023

- "*On Projective Gauge Gravity*", by Michael Connolly*, University of Iowa, Math-Physics Seminar 2023

- "*Re-framing Projective Gauge Gravity*", by Michael Connolly*, 34th Midwest Theory Get-Together at Argonne National Laboratory, Oct 2023

- "*Projective Gauge Gravity and the Standard Model*", by Michael Connolly*, University of Iowa, Nuclear and Particle Physics Seminar, Spring 2023

- "*Projective Gauge Gravity and the Standard Model*", by Michael Connolly*, University of Wisconsin-Parkside, Spring 2023

- "*Neutrino-less Double Beta Decay and the Origins of Neutrino Mass*", By Michael Connolly*, Nuclear and Particle Physics Seminar , 2022

- "*Road to a Quantum Theory of Thomas-Whitehead Gravity*", by Salvatore Quaid*, 34th Midwest Theory Get-Together at Argonne National Laboratory, Oct 2023

- "*Quantization of Thomas-Whitehead Projective Gravity*", by Salvatore Quaid, University of Iowa, Nuclear and Particle Theory Seminar, April 2023.

- Poster: "Towards Quantum Gravity via Projective Geometry", by Sam Dev Singh**, Eric Biedke**, SURC July 2022

- "*2-D Quantum Gravity Via the Thomas-Whitehead Projective Action*", by Salvatore Quaid, University of Iowa, Nuclear and Particle Theory Seminar, (July 2022)

- "*Geodesics in Thomas-Whitehead Projective Gravity*", by Salvatore Quaid, Honors Thesis Presentation April 2022.

- Poster: "*Projective Black Holes*", by Salvatore Quaid*, Fall Undergraduate Research Festival, University of Iowa, Nov 2021

- "*Gravitational Radiation and Black-Holes in TW Gravity*", by Tyler Grover, 34th Midwest Theory Get-Together, Argonne National Laboratory October, 2023

- "*Gravitational Radiation and Black-Holes in TW Gravity*", by Tyler Grover, Math Physics Seminar, University of Iowa, Department of Physics and Astronomy October, 2023

- "*Gravitational Radiation and Black-Holes in TW Gravity*", by Tyler Grover, Nuclear and Particle Physics Seminar, University of Iowa, September, 2023

- "*Gravitational Radiation in TW Gravity*", by Tyler Grover, Math Physics Seminar, University of Iowa, April, 2023

- "*Looking for Projective Black Holes*", by Tyler Grover, Particle Physics and Cosmology 2022, Washington University, June 2022

- "*Active Galactic Nuclei & Jets*" by Tyler Grover, Nuclear and Particle Physics Seminar, University of Iowa, January 2022

- "*Black Holes in Thomas-Whitehead (TW) Projective Gravity*", by Tyler Grover, Midwest Relativity Meeting 2021, University of Illinois Urbana-Champaign November 2021

- Poster: "*Gravitational Radiation and Projective Geometry*", by Hazal Zenger* (Grinnell), SURC, University of Iowa, July 2022

- "*Gravitational Radiation and Projective Geometry*", by Hazel Zenger* (Grinnell), CuWIP, University of Iowa, Jan 2023

- Poster: "*The origin and Interaction of Dark Matter with the Standard Model*" by John Horne* and Minwoo Son* (Grinnell), SURC, University of Iowa, July 2022

- Poster: "*Towards Quantum Gravity via Projective Geometry*", By Samridh Singh* (Grinnell) and Eric Biedke*, SURC, University of Iowa, July 2022

Present Research Manuscripts in Progress

1. *Review of Thomas-Whitehead Gravity*, Vincent Rodgers (anticipated Mar 2026)

2. *The Standard Model in Thomas-Whitehead Gravity*, Vincent Rodgers and Kory Stiffler (anticipated April 2026)

3. "Constraint Analysis and Quantization of Anomalous Thomas- Whitehead Gravity", by Eric Biedke (Ohio State), Salvatore Quaid, and Vincent Rodgers, (to be submitted January 2026)

Invited Lectures and Conference Presentations

Invitations/Conferences: International

1. Invited Talk: "Quantum *K*-Strings", Workshop on Confining Flux Tubes and Strings. Trento, Italy July, 2010

2. Invited Talk: "Coordinate Transformations and Dark Energy"', Raman Research Institute, Bangalore, India Aug. 2007

3. Invited Talk: "Diffeomorphisms and Dark Matter", given at *Spacetime and Fundamental Interactions: Quantum Aspects*, A conference to honor A. P. Balachandran's 65th birthday, Vietri sul Mare - Salerno - Italy (May 2003)

4. Conference Talk: "Yang Mills, Gravity and 2D String Symmetries", 6th

International Symposium on Particles, Strings and Cosmology (March 1998), Northeastern University

5. Theory Seminar: "Covariant String Field Theory", Informal Summer School on Superstrings, Argonne National Laboratories (June, 1986)
6. Theory Seminar: "Skyrmion-Quark Mixing", The Seventh Annual Montreal-Rochester-Syracuse-Toronto, University of Rochester (May, 1985)
7. Invited Visiting Scientist: Institute of Science, Bangalore, India (September-November 1984)

Invitations/Conferences: National

1. Seminar: "Tying String Theory to Gravitation through Geodesics, Continued", Math-Physics Seminar 2025
2. Seminar: "Tying String Theory to Gravitation through Geodesics", Math-Physics Seminar, Sept 2025
3. Seminar: "Quantum Computing and TW Gravity", Room 316, Syracuse University, May 16, 2024
4. Seminar: "Quantum Computing and TW Gravity" Math-Physics Seminar, University of Iowa, April 16, 2024
5. Seminar: "The Power of Mathematical Symmetry in Theoretical Physics", AMCS, University of Iowa, March 2024
6. Seminar: "Renormalization Group in Hamiltonian Formulation", University of Iowa, Math-Physics Seminar, Sept 2023
7. Seminar: "The Fundamental Origin of Dark Matter and Dark Energy in Projective Gauge Gravity", University of Iowa, Math-Physics Seminar, April 2023
8. Colloquium: "Building a Gravitational Theory from String Symmetries", University of Iowa, Society of Physics Students, March 2023
9. Colloquium: "Building A Gravitational Theory from String Symmetries", Syracuse University, Oct 2022,
10. Invited Talk: "From Virasoro to Thomas-Whitehead", Jim Fest, SUNY Stony Brook, Institute for Theoretical Physics, April 2022
11. Colloquium: "Projective Geometry and Gravitation", University of Wisconsin, La Crosse, Nov 2022

12. Colloquium: "Projective Gauged Gravity", University of Rochester, Department of Physics and Astronomy, Oct 2021

13. Colloquium: "Projective Geometry and Gravitation", Applied Mathematics and Computational Sciences Seminar, University of Iowa, Sept 2022

14. Invited Talk: "Projective Geometry and Gravitation", *Miami 2020 Physics Conference*, Dec. 2020

15. Seminar: "Projective Geometry and Gravitation", University of Iowa, Math-Physics Seminar, Nov. 2020

16. Seminar: "From Geodesics to 4D Dark Matter and Energy", CUNY, City College New York. Theoretical Physics Seminar, City University of New York Presenters Oct 2020

17. Colloquium: "Science and Civilization as Seen By A Physicist", Department of Physics, City College of New York, City University of New York Oct 2020

18. Seminar: "From 2D Gravity to 4D Dark Energy and Dark Matter via Geodesics", Brown Theoretical Physics Center, Brown University, Providence, Rhode Island May 2020

19. Seminar: "Projective Geometry and Gravitation", *Room 316,* Department of Physics Syracuse University, Syracuse, New York May 2020

20. Seminar: "From Math to Mother Nature", Applied Mathematics and Computational Sciences, University of Iowa, Spring 2019

21. Invited Lecture: "The Black Hole and its Image", The Unity Group, Clinton IA May 2019

22. Colloquium: "Projective Geometry in Classical and Quantum Gravity", Grinnell College, April 2019

23. Invited: Hawkeye Lunch and Learn Lecture Series, "Why Study Gravitation? What Else is There To Know?" Office of Outreach and Engagement, Des Moines, Iowa March and April 2018

24. Keynote: "Science and Civilization: A Physicist Perspective," LSAMP IINSPIRE Annual Conference, National Science Foundation, Des Moines, Iowa, Feb 2016

25. Invited: National Society of Black Physicists, "New Supergravity Solutions Arising from T-Duality and Non-Abelian T-Duality", NSBP, Baltimore, Maryland Feb. 2016

26. Panel Discussion on STEM Graduate Programs, Wartburg College, Waverly, IA, Oct. 2013

27. Colloquium: "The Power of Symmetry in Theoretical Physics", Augustana College, SD, Nov. 2013

28. Colloquium: "The Power of Symmetry in Theoretical Physics", Grinnell College, Sept. 2013

29. Invited: "Austin Holography Workshop", University of Texas at Austin, May 2013

30. Panel Discussion, Career Day, DeSmet Jesuit High School, St. Louis Mo., Nov. 2012

31. Colloquium: "Anatomy of String Theory", Grinnell College, Nov. 2010

32. Colloquium: "Anatomy of String Theory", Wesleyan University, Dec. 2010

33. Colloquium: "Anatomy of String Theory", SUNY Buffalo, NY, Nov. 2010

34. Seminar: "A New Class of Confining Theories Using Sasaki-Einstein Manifolds". CCNY, June, 2010

35. Colloquium: "Anatomy of String Theory", Macalester College, MN October, 2009

36. Seminar: "The Physics of the Big Bang: From Elementary Matter to the Universe", Macalester College, MN October 2009

37. Colloquium: "Unravelling The Mathematical Laws of Dark Energy and Dark Matter", Wayne State University, October, 2008

38. Invited Speaker: American Physical Society Meeting: Graduate Education in Physics. Which Way Forward? Conference, January 31 February 2, 2008

39. Public Lecture - Café Scientifique: "The Physics of the Big Bang", December 2007

40. Invited Talk: "Coordinate Transformations and Dark Energy", University of California, Riverside Jan. 2007

41. Invited Talk: *Miami 2006*, "A Geometric Action for the Courant Bracket"

42. Colloquium: "Anatomy of String Theory", Creighton University, Omaha, Nebraska, Nov. 2006

43. Invited Participant: "Affine Hecke Algebras, The Langlands Program, Conformal Field Theory and Matrix Models" CIRM - Luminy, France, 2 July - 14 July, 2006

44. Invited Talk: *Miami 2005*, "Can the Algebra of Diffeomorphisms Explain Dark

Energy?"

45. Invited Talk: American Physical Society, April 2005 Meeting, "Diffeomorphisms and Dark Energy"

46. University of Iowa Series of talks on the AdS/CFT conjecture Fall 2005 - Spring 2006

47. Public Lecture - Café Scientifique: "So what is String Theory Anyway?", December 2005

48. Several annual talks at the University of Iowa in Math Physics and Joint Experimental and Theoretical Physics Seminar

49. Colloquium: "Anatomy of String Theory", University of Kansas, Lawrence, Kansas, Jan. 2005

50. Colloquium: "Symmetry in Gravity: From General Relativity to String Theory", St. Benedictine, Kansas, April, 2004

51. Colloquium: "Symmetry in Gravity: From General Relativity to String Theory", University of Miami, April 2004

52. Invited Presentation: "Fundamentals of Physics", National Conference of Hispanic Professional Engineers, Jan, 2004

53. Invited Participant: Workshop of "Conformal Symmetry in Geometry, Analysis, and Physics", The American Institute of Mathematics, Palo Alto, CA (August, 2003)

54. Invited Talk: "Actions From the Dual of Algebras ", given at *Pierre Fest*, A conference to honor Pierre Ramond's 60th birthday, (Gainesville, FL), Feb 2003

55. Physics Colloquium: "Symmetry in Gravity: From General Relativity to String Theory", North Carolina A & T (November, 2002)

56. Invited Talk: "Coadjoint Representation of the Super Virasoro Algebra and Super Gravitons", given at Conference of African American Researchers in the Mathematical Sciences 8, Princeton University (June, 2002)

57. Physics Colloquium: "The Trouble with Gravity", Florida Institute of Technology, Melbourne, FL (November, 2001)

58. Invited Member: Workshop on Geometrical Aspects of Spectral Invariants Mathematical Science Research Institute, Berkeley, CA (April-May 2001) (see http://www.msri.org/)

59. Physics Colloquium: "The Trouble with Gravity", Grinnell College, Grinnell, IA (Feb. 2001)

60. Physics Colloquium: "Gravity, the BIG G!", Butler University, Indianapolis, IN (Dec. 1999)

61. Theory Seminar: "A Gravitational Order Parameter?", University of Maryland, College Park (October 1998)

62. Theory Seminar: "Yang Mills, Gravity and 2D String Symmetries", University of California, Berkeley (April 1998)

63. Theory Seminar: "Yang Mills, Gravity and 2D String Symmetries", Syracuse University (March 1998)

64. Theory Seminar: "Yang Mills, Gravity and 2D String Symmetries", City College, CCNY, NY,NY (March 1998)

65. Theory Colloquium: 'Yang Mills, Gravity and 2D String Symmetries", NSBP Conference, University of Kentucky (March 1998)

66. Physics Colloquium: " Do Physicists Play God?: The Big Bang", Coe College, Cedar Rapids, IA, (Feb. 1998)

67. Invited Participant: Aspen Center for Physics, (July 1997)

68. Theory Seminar: "The Action Principle and Quantum Mechanics", National Institute of Standards and Technology, Greenbelt, MD (June 1997)

69. Theory Seminar: "Noether's Theorem and Symmetry in Physics", Central Michigan University (March 1997)

70. Theory Seminar: "4D Physics From 2D Physics", University of Florida, Gainesville (September 1996)

71. Theory Seminar: "Coadjoint Orbits and Geometric Actions", American Mathematical Society, Iowa City, (March 1996)

72. Luncheon Address: NSBP Conference, Washington, D.C., (Mar. 1995)

73. Theory Seminar: "A Gravitational Theory Arising From 2D String Symmetries"', Iowa State University, (Sept, 1994)

74. Theory Seminar: "Building Physical Theories", Prairie View A & T (April 1994)

75. Theory Seminar: "Topological Defects in Physics", Mississippi State University (March 1994)

76. Public Lecture: "The History of Science: A Physicist's Viewpoint", Mississippi State University (March 1994)

77. Physics Colloquium: "The Structure of Theories in Elementary Particle Physics", North Carolina A & T, (March 1994)

78. Invited Participant: Mathematical Sciences Research Institute, Berkeley, CA (Jan 1994)

79. Theory Seminar: "Noether's Theorem in Physics", Carleton College, Carleton, MN. (March 1993)

80. Public Lecture: "The History of Science: A Physicist's Viewpoint", Carleton College, Carleton, MN. (March 1993)

81. Theory Seminar: "From Coadjoint to WZNW models and 2D Polyakov Gravity", University of Maryland, (March 1992)

82. Theory Seminar: "QCD and 2D Surfaces", Institute of Mathematical Sciences, Madras, India (Jan. 1992)

83. Public Lecture: "Contributions of Non-European Cultures to Science", University of Notre Dame and the Ford Foundation, (June 1991)

84. Theory Seminar: "Effective Actions and Coadjoint Orbits", Iowa State University, (Nov. 1991)

85. Theory Seminar: "Instantons and 2D Surfaces", University of Maryland, (Nov 1991)

86. Participant: "Symmetry and Strings" Conference, Stony Brook, NY (March 1991)

87. Colloquium: "Topology in Physics", The University of Iowa (April 1989)

88. Theory Seminar: "2D Supergravity from the Super Virasoro Algebra", University of Maryland (April 1989)

89. Theory Seminar: '2D Supergravity from the Super Virasoro Algebra", University of Miami (Feb 1989)

90. Theory Seminars: Various seminars at the Institute for Theoretical Physics, SUNY Stony Brook (1987-1989)

91. Visiting Scientist: Institute for Theoretical Physics, University of California at Santa Barbara (July-Aug 1986)

92. Theory Seminar: Several Seminars at the University of Florida, (1986-1987)

93. Invited Participant: Aspen Center for Physics, (June-July 1986)

94. Theory Seminar: "Covariant String Field Theory", Syracuse University (November 1985)

95. Invited Speaker: "Protons as Solitons", The National Technical Association, Houston, TX (July 1985)

96. Participant of the Theoretical Advanced Study Institute, Yale University (June-July 1985)

97. Participant at the Symposium on Anomalies, Geometry and Topology, Argonne National Laboratories (March 1985)

98. Invited Participant: The Lewes Center for Physics, Workshop on Solitons in Nuclear Physics (June, 1984)

Conference Organization/Administration

1. Summer Student Theoretical Physics Research Session, Joint with University of Maryland: Organizer, June-July in 1999, 2000-2006, 2008-2009, 2010-2014 (at UI), 2017, 2023
2. Bootcamp for Grad Careers, University of Iowa Graduate College (2021, 2022, 2023)
3. IINSPIRE LSAMP Conference Organizer (2018, 2023)
4. Organizing Committee: The 2007 Midwest Geometry Conference - In Honor of Thomas P. Branson (1953-2006) (May 2007)
5. Conference Organizer National Society of Black and Hispanic Physicist, String Theory Session: 2005
6. Conference Organizer (with Sylvester J. Gates) National Society of Black and Hispanic Physicist, String Theory Session: 2004
7. Organizer: (with John Beem and Thomas Branson) Gravitation: 10th Annual Midwest Geometry Conference (April 2002)
8. Organizer: (with Thomas Branson) Physical Perspectives: 10th Annual Midwest Geometry Conference (April 2000)
9. Organizing Committee: National Society of Black Physicists, 2003 Annual Conference, Atlanta, GA

Grants (funded)

Grants and Contracts: Internal

1. AAU PhD Education Initiative, Grad College, $140,000, June 2020 – June 2023 (administrator)
2. "Expanding and Enhancing STEM Initiatives Within CLAS": Hawk-Eyes In Space, Sept 2012-Sept 2013 $10,000
3. Instructional Improvement Award: Visual Aids for the course Physics of the Body, PI, $2000
4. CIFRE: "Extra-Galactic Structure of Gravity", Jan 1999- June -1999, PI, $5,000
5. Obermann Fellowship: "Towards a Quantum Theory of Gravitation", June 30, 1996 - July 31, 1996, Co-PI, with Prof. Thomas Branson (Math) $3,500
6. Carver Grant: "PHASE TRANSITIONS IN GRAVITY" 1993 $5,000
7. WEEG Instructional Computing Proposal: Video disc for Physics 1993 $2,000
8. Old Gold Fellow: Summer 1991, University of Iowa $2,000
9. Interdisciplinary Research Assistantship: Prof. Thomas Branson was co-principal investigator
   $10,000 1990-1991 (Math-Physics)
10. Old Gold Fellow: Summer 1990, University of Iowa PI, $2,000

Grants and Contracts: External(funded)

1. NSF Grant: "IINSPIRE LSAMP, Iowa, Illinois Nebraska STEM Partnership in Research and Education", Jan 2023 - Dec 2028 ($780,203.37)
2. NSF Grant: "IINSPIRE LSAMP, Iowa, Illinois Nebraska STEM Partnership in Research and Education", Oct 2016 - Sept 2021 ($560,000)
3. NSF Grant: "Confining Geometries and Quantum Chromodynamics", June 2011-May 2014 ($30,000)
4. The University of Iowa IMSD: Iowa Bioscience Advantage, Jan 2012 - Sep 2022, $2,309,282

5. The University of Iowa IMSD: Iowa Bioscience Advantage, Dec 2008- Jan 2012, $4,592,020

6. (with Mr. Dale Stille) APS Grant: "LaserFest", December 2009, $6,000

7. NSF Grant: PHY-0244377, "Diffeomorphisms, K-Strings, and Cosmology"', June 2007-May 2010,
   $30,000

8. (with Mr. Dale Stille) Bauder Fund: "Hawk-Eyes on Science", December 2004, $1000

9. (with Dale Stille) APS Grant: "Hawk Eyes on Science", December 2004, $10,000

10. NSF Grant: PHY-9103914, "Conformal Symmetry, Four Manifolds, and QCD", September 1991-January 1994, PI, $36,500

11. NSF Grant: PHY-9411002, "Issues in Gauge Theories", September 1994-January 1997, PI, $57,000

12. NSF Grant: PHY-0244377, "From Diffeomorphisms to Dark Matter"', June 2003-June 2006, PI
    $50,000

Courses

Courses Taught at the University of Iowa 2019-2025

Term	Course#	Title	Enrollment
Fall 2025	PHYS:7990:0001	Graduate Research	3
Fall 2025	PHYS:4999:1220	Undergraduate Research	1
Fall 2025	ISA:3992:9971	Undergraduate Research	1
Fall 2025	PHYS:4761:0001	Mathematical Physics I	14
Spring 2025	ISA:3992:8167	Undergraduate Research	2
Spring 2025	PHYS:7990:7880	Graduate Research	3
Fall 2024	PHYS:7992:6408	Individual Critical Study	1
Fall 2024	PHYS:4999:5811	Undergraduate Research	1
Fall 2024	PHYS:4761:0001	Mathematical Physics I	6
Fall 2024	ISA:3992:7048	Undergraduate Research	2
Fall 2024	PHYS:7990:5818	Graduate Research	3
Summer 2024	PHYS: 7990:5191	Graduate Research	3
Spring 2024	PHYS:7990:4201	Graduate Research	4
Spring 2024	ISA:3992:5051	Undergraduate Research	1
Spring 2024	PHYS:7761	Cosmology	6
Fall 2023	PHYS:7760:0001	General Relativity	10
Fall 2023	PHYS:7990:1642	Graduate Research	5
Summer 2023	PHYS:7990:1381	Graduate Research	1
Spring 2023	PHYS:2704	Physics IV	42
Spring 2023	PHYS:7990:0273	Graduate Research	
Fall 2022	*PHYS:1999:0035 PHYS:5000:0035	Professional Skills for Physics and Astronomy	12
Fall 2022	PHYS:7840:0001	Quantum Gauge Theories	4

Term	Course#	Title	Enrollment
Summer 2022	PHYS:7990:7341	Graduate Research	1
Spring 2022	PHYS:4762:0001	Mathematical Physics II	6
Spring 2022	PHYS:7990:6387	Graduate Research	2
Fall 2021	IBA:1041	IBA Student Development	10
Fall 2021	PHYS:7760:0002	General Relativity	8
Fall 2021	PHYS:7990:3987	Graduate Research	3
Spring 2021	IBA:3992:2776	IBA Research	1
Summer 2021	PHYS:7990:3175	Graduate Research	1
Spring 2021	PHYS:5812:001	Classical Electrodynamics II	18
Fall 2020	PHYS:7990:9766	Graduate Research	4
Fall 2020	IBA:3992:0386	Undergraduate Research	1
Fall 2020	IBA:3992:0386	IBA Student Development	6
Fall 2020	PHYS:5811:0001	Classical Electrodynamics I	15
Summer 2020	AMCS:7990:0072	Graduate Research	1
Summer 2020	PHYS:7990:9183	Graduate Research	1
Spring 2020	PHYS:7761:0001	Cosmology	12
Spring 2020	IBA:3992:8512	IBA Research	1
Spring 2020	**PHYS:7992:8336	Individual Critical Study *Classical Electrodynamics II*	3
Spring 2020	PHYS:7990:7694	Research: Physics	5
Spring 2020	PHYS:1999:0035	Professional Skills for Physics and Astronomy	5
Spring 2020	**PHYS:5000:0035	Workshops & Special Training in Physics	8
Fall 2019	PHYS:5811:0001	Classical Electrodynamics I	14
Fall 2019	IBA:1041:0003	IBA Student Development Seminar	7
Fall 2019	AMCS:7990:6342	Reading and Research	1
Fall 2019	PHYS:7990:5644	Research: Physics	4
Fall 2019	**PHYS:5905:0001	Special Topics in Physics *Group Theory For Physicists*	6

- ** Represents Overload Course

Courses Developed and Year Introduced

- Advanced Quantum Field Theory I and II (1991)

  This course introduces Yang-Mills gauge theories, quantization of General Relativity, and String Theories. Topics include, Renormalization Group, Noether symmetries, quantum anomalies of classical symmetries, anomalous dimensions, symplectic geometry and Hamiltonian methods of field theory quantization.

- Physics For Physics and Astronomy Majors I and II (1993)

  This course was the first to establish a "home room" course for students majoring in physics and astronomy. The course focuses on more detail and in the development of physics and astronomy as an experimental and mathematical science. This course now has four semesters of material.

- General Relativity for Undergraduates (1995)

  Today's physics is understood through field theories. Undergraduates get strong exposure to electricity and magnetism in their curriculum. However, electrodynamics makes up only one of the four known forces. Quantum field theories describing the nuclear forces are best left to graduate material but Einstein's theory of General Relativity as a classical theory of gravitation is ideal for a course following electrodynamics.

- Physics of the Body (2000)

  The importance of understanding biological systems through mathematics and physics has never been underestimated. This course was designed to bring the principles and mathematics of physics to biology and medicine.

- String Theory (2005)

A formal course in string theory is introduced so that students are familiar with one of the most consistent mathematical theories known to date. The course takes students through the rigors of explaining the origins of string theory and how it naturally evolved into the framework it is in today.

- Group Theory for Physicists (1995) Representation theory and Group theory are essential to understanding the mathematical framework of modern physics. This course addresses group theory from a calculational point of view. Lie Algebras, Lie Groups, and representation theory are discussed.

- Exotic R^4 Manifolds (2014)

In the late 80's and early 90's, Donaldson was able to use gauge theories to arrive at

profound differences between differentiable four manifolds and other manifolds. The course takes us through the underpinnings of what lead to the uncountably infinite number of differentiable structures in four dimensions. The course leads up to Seiberg-Witten theory used in string theory and particle physics.

• Cosmology (2020)

Cosmology has become a major area of research in the last two decades. In order to keep students aware of the changing landscape cosmology has been decoupled form General Relativity. This course is designed for advanced undergraduates and graduates students. The course is considered a core course for graduate students in the Astro track.

Student Mentoring

Research Student Mentoring: Students receive at least one hour of direct research mentoring per week as well as weekly combined research meeting with the whole group.

University of Iowa Students Advised			
Degree Objective	Student Name	Years	**Outcome**
Ph.D	Zachary Andersen	2024 - Present	
M.S.	Nicholas Harshmann	2022 - Present	
Ph.D.	Salvatore Quaid	2021 - Present	
Ph.D.	Michael Connolly	2020 - 2025	**Graduated**
Ph.D.	Tyler Grover	2019 -2024	**Graduated**
Ph.D.	Casandra Bogh	2015 - 2020	**Graduated (with Prineas)**
Ph.D.	Calvin Mera	2017 - 2022	**Graduated**
M.S.	Manuel Martinez-Martinez	2015 - 2021	**Graduated**
Ph.D.	Kenneth Heitritter	2015 - 2020	**Graduated**
Ph.D.	Samuel Brensinger	2015 - 2020	**Graduated (*Spriestersbach Award)***
Ph.D.	Delalcan Kilic	2010 - 2015	**Graduated**
Ph.D.	Catherine Whiting	2011 - 2014	**Graduated**
Ph.D.	Bradly Button	2008 - 2014	**Graduated**
Ph.D.	Da Xu (Math)	2005-2010	**Graduated (Co-Advised)**
Ph.D.	Tuna Yildirim	2007 - 2014	**Graduated**
Ph.D.	Chris Doran	2007 - 2016	**Withdrew**
Ph.D.	Heather Bruch (Math)	2006 - 2007	**Transferred**
Ph.D.	Ibrahima Bah	2006 - 2010	**Transferred to Univ. of Mich**
Ph.D.	Kory Stiffler	2005 - 2011	**Graduated**
Ph.D.	Leo Rodriguez	2004 - 2012	**Graduated**
Ph.D.	Xiaolong Liu	1996 - 2006	**Graduated**
Ph.D.	Takeshi Yasuda	1989 - 1996	**Graduated**
M.S. and Ph.D.	Ralph Lano	1989 - 1995	**Graduated**
M.S.	Lifiana Somantri	2007 - 2021	**Graduates**
M.S.	Joseph Modrick	1990 - 1994	**Graduated**
M.S.	Jay Happel	1990 - 1993	**Graduated**
M.S.	Bob Bacus	1992 - 1998	**Graduated**
B.S.	Owen Fiedorowicz	2023-2024	
B.S.	Landen Freeman	2024 - Present	
B.S.	Eduardo Sandoval	2024 - Present	
B.S.	Avery Eckhardt	2024 -Present	
B.S.	Yihan Shen	Summer 2024	**(Grinnell)**
B.S.	Connor McMillin	Summer 2024	**(Grinnell)**
B.S.	Colin Lahvic	2022 - 2023	
B.S.	Eric Biedke	2022 - Present	**Graduated**
B.S.	Sam Singh	Summer 2022	**(Grinnell)**
B.S.	Minwoo Son	Summer 2022	**(Grinnell)**
B.S.	John Horne	2022 - 2023	**Graduated**
B.S.	Hazal Zenger	Summer 2022	**Graduated (Grinnell)**
B.S.	Alexis Leali	2019 - 2020	**Graduated**
B.S.	Patrick Vecera	2018 - 2022	**Graduated**
B.S.	Cole Dorman	2019 - 2020	**Graduated**
B.S.	Indira Sheumaker	2019	**Withdrew**
B.S.	Salvatore Quaid	2019	**Graduated**
B.S.	Peters, Eric	2019 - 2022	**Graduated**
B.S.	Taylor DeMello	2019	
B.S.	William Fuelberth	2018	**Graduated**
B.S.	Calvin Whittaker	2018	**Deceased**

B.S.	Sophia Taylor	2018	**Graduated**
B.S	Nick Jones	2018	**Graduated**
B.S.	Ryan Helland	2017	**Graduated**
B.S.	Yiding Han	2015	**Graduates**
B.S.	Keshav Sutrave	2016	**Graduated**
B.S.	Kaitlyn DePena	2014	**Graduated**
B.S.	Seo Jun Lee	2012	**Graduated**
B.S.	Wade Bloomquist	2010 - 2012	**Graduated**
B.S.	Suzanne Carter	2010 - 2012	**Graduated**
H.S.	Hart Goldman	2010 - 2011	**Graduated**
B.S.	Maria Divoky	2005 - 2006	**Graduated**
B.S.	Stephen Gliske	2005 - 2006	**Graduated**
B.S.	Nichole Keifer	2005 - 2006	**Graduated**
B.S.	Sarah Klemuk	1996 - 2000	**Graduated**
B.S.	Joseph Evans	1997 - 2001	**Graduated**
B.S.	Antonio Bovia	1997 - 2001	**Graduated**
B.S.	Nadia Sifri	1993 - 1997	**Graduated**
B.S.	Laura Laberge	1992 - 1996	**Graduated**
B.S.	Jackie Coyne	1994 - 1999	**Graduated**
B.S.	**David Reynolds**	**1994 - 1998**	**Graduated**

Recent Graduate Exam Committee Assignments (Nov 2022 – Dec 2025)

Student	Dates	Advisor	Committee
Philip Kopp	October 2025	Wayne Polyzou	Comprehensive Exam
Zheyue Hang	Nov 2025	Wayne Polyzou	PhD Final Exam
Michael Connolly	May 2025	Vincent Rodgers	PhD Final Exam
Brady Martin	April 2025	Wayne Polyzou	PhD Final Exam
Michael Hite	March 2025	Yannick Meurice	PhD Final Exam
James Corona	November 2024	Yannick Meurice	PhD Final Exam
Tyler Grover	July 2024	Vincent Rodgers	PhD Final Exam
Michael Connolly	April 2024	Vincent Rodgers	Comprehensive Exam
Keith Vidal	April 2024	Allison Jaynes	PhD Final Exam
Salvatore Quaid	April 2024	Vincent Rodgers	Comprehensive Exam
James Corona	Feb 2024	Yannick Meurice	Comprehensive Exam
Zheyue Hang	Nov 2023	Yannick Meurice	Comprehensive Exam
Robert Maxton	Nov 2023	Yannick Meurice	PhD Final Exam
Ohannes Kamer Koseyan	Nov 2023	Yasir Onel	Comprehensive Exam
Michael Hite	Nov 2023	Yannick Meurice	Comprehensive Exam
Sarah Henderson	Sept 2023	Jasper Halekas	PhD Final Exam
Diksha Garg	July 2023	Mary Hall Reno	PhD Final Exam
James Corona	May 2023	Yannick Meurice	Comprehensive Exam (Cancel)
Keith Vidal	April 2023	Allison Jaynes	Comprehensive Exam
Daniel Simons	April 2023	Yannick Meurice	PhD Final Exam
Robert Maxton	Feb 2023	Yannick Meurice	Comprehensive Exam
Diksha Garg	Nov 2022	Mary Hall Reno	Comprehensive Exam
Sarah Henderson	Nov 2022	Jasper Halekas	Comprehensive Exam

(Selected) Other Student Mentoring Outside of Research Group

Student	Dates	Advisor	Comments
Sadie Tetrick	2016-2021	Don Gurnett	Informal advisor, including weekly meeting to prepare for

			qualifying exam taken in April 2020
Keith Vidal	2021	Allison Jaynes	Meet bi-weekly after his advisor left the university as wellness check and academic support
Cassandra Bogh	2019 – 2021	John Prineas	Meet weekly with Cassandra and advisor to facilitate graduation
Evan Abbuhl	2021	Mutel	Weekly check-ins to support graduation
Robert Maxton	2023 – 2024	Meurice	Assisted advisor in expediting graduation of students with weekly meetings.
James Corona	2023-2024	Meurice	Assisted advisor in expediting graduation of student with weekly meetings.
Brandon Bergerud	2021	Spangler	Weekly check-ins to support graduation
Nilay Bostan	2021-2022	Onel	Assisted with various challenges regarding language requirements
Gurkan Karaman	4/2024-10/2024	Onel/Nachtman	Assisted advisors with strategies for student's future

DGS Initiatives 2019-2024

Sponsored in part by the AAU PhD Education Initiative

- GRADMap: The Graduate Mentoring in Physics and Astronomy (GRADMap) is a Peer mentoring program that helps early graduate students with transitioning into graduate school, navigate department resources, and provide a network of mentorship. Places students into a mentoring cohort, consisting of two 1st year and two 2nd year graduate students, led by upper-level graduate students, who provides guidance and introduces them to resources within the department.

- Summer Research Support for First Year Students: Use endowed monies from the Andrew Nelson funds and Grad College monies from AAU to support first-year students with a one to two summer month "Graduate Research Experience". Faculty and Student must work to identify a project. Students also learn writing skills for proposals and research summaries. Students and faculty have a first look at skills and requirements for subfields.

- LinkedIn Page Campaign: Supports alumni successes. Improves networking for present students. Serves as News Source for Department.

- Individual Development Plan: Yearly faculty/student review replaces the PhD qualifying exam. Faculty and Student are required to examine and reexamine the career aspirations and preparation through and IDP. The IDP becomes part of the graduate student record. This is adopted from the Graduate College IDP initiative.

- Professional Development Course (PHYS:5000/PHYS:1999): The course aimed to equip physics and astronomy students with some of the professional skills that they will need going forward after their graduations with BA, BS, MS or PhD degrees. The course met weekly for 1 hour with guest presentations from a variety of physics and astronomy faculty and others from campus and the professional community. Topics included: how to put together a CV (curriculum vitae) and a resume (and how they are different), career prospects and options with a physics/astronomy degree, dealing with cultural diversity in the physics/astronomy workforce, how to get involved with research at all levels (first year undergraduate through graduate students), skills employers are seeking, and applying for graduate programs, postdoc positions, various fellowships and jobs of all kinds.

- Graduate Student/ Postdoc Appreciation Days: strategies to incorporate post-docs into the department via informal gatherings. Grad student appreciations days carried out by the Department with donuts in the main office. During COVID pandemic, instituted brown bag Lunch & Learn series.

- Quantum Information Studies Support (QIS): Bridges the silos found in theoretical physics, experimental physics, chemistry, engineering, and mathematics. Bridges the intellectual efforts of industry and the academy. Supports many other efforts such as artificial intelligence and deep learning

AAU Monies Allocations for 2021-2023					
Last Name	First Name	Advisor	Program	Amount	Date
Vidal	Keith	Jaynes	RA	2943	6/1/2021
Vidal	Keith	Jaynes	RA	2897	7/1/2021
Langer	Patrick	Skiff	Nelson	2230	8/31/2021
Palacios	Eduardo	Uppu	Nelson	2230	8/31/2021
Palacios	Eduardo	Uppu	Nelson	2230	8/31/2021
Vaghefi Esfidani	Seyedeh Maryam	Folland	Nelson	2230	8/31/2021
Fuller	Chase	Kaaret	Nelson	2230	8/31/2021
Nair	Raaman	Halekas	Nelson	2230	8/31/2021
Sullivan-Wood	Jonathan	Pryor	Nelson	2230	8/31/2021
Fruchtman	Jacob	Halekas	Nelson	2230	8/31/2021
Corona	James	Meurice	Nelson	2230	8/31/2021
Fasano	Cecilia	DeRoo	Nelson	2230	8/31/2021
Hang	Zheyue	Meurice	Neslon	2229	8/31/2021
Roberts	Caroline	DGS	GRADMAP	1049	3/31/2022
Bowling	Event	DGS	GRADMAP	257	3/14/2022
Gross	Arran	DGS	Award	500	3/31/2022
Fasano	Cecilia	DGS	Award	500	3/31/2022
Mentor-Mentee	Lunch	DGS	GRADMAP	3213	FY 22
Rui	Huang	Hoadley	Nelson	2259	7/31/2022
Nelson	Matthew	Uppu	Nelson	2259	7/31/2022
Henderson	Sarah	Halekas	Nelson	2259	7/31/2022
Posilgua	Jonatan	Rodgers	Nelson	2259	7/31/2022

Sink	Joseph	Pryor	Nelson	2259	7/31/2022
Bellis	Zoe	Hoadley	Nelson	2259	7/31/2022
Terminin	Jared	Hoadley	Nelson	2259	7/31/2022
Fehr	David	Flatte	Nelson	2259	7/31/2022
Hall	Kevin	Fu	Nelson	2259	7/31/2022
Vaghefi Esfidani	Seyedeh Maryam	Folland	Nelson	2259	7/31/2022
Saraswat	Himani	Folland	Nelson	2259	7/31/2022
Buffo	Kenneth	Gayley	Nelson	2259	7/31/2022
Madden	Masson		Nelson	2259	7/31/2022
Heitritter	Kenneth	Meurice	RA	3381	9/30/2022
Quaid	Salvatore	Rodgers	Conference Support	659	9/30/2022
PhysCON	Booth	P&A	Recruitment	500	9/30/2022
Troyer	Riley	P&A	Recruitment	292	10/21/2022
Quaid	Salvatore	Rodgers	Conference Support	1635	10/21/2022
Schrock	Katrina	Prenias	RA	1366	3/31/2023
Bankers Advertising		P&A	Poster	808	4/17/2023
Hite	Michael	Meurice	RA	4500	5/17/2023
Kupari	Luke	Reno	Summer RA	1400	5/17/2023
Harshmann	Nicholas	Rodgers	Summer RA	1400	5/17/2023
Bangari	Ramachandran	Folland	Summer RA	1400	5/17/2023
Pradhan	Mohit	Flatte	Summer RA	1261	5/17/2023
Ozello	Zane	Meurice	Summer RA	1400	5/17/2023
Hang	Zheyue	Meurice	QIS-RA	4500	5/17/2023
Pradhan	Mohit	Flattee	Fees	139	5/17/2023
Bukari	Syed	Candido	Summer RA	1400	5/17/2023
Schrock	Katrina	Prineas	Summer RA	1027	5/17/2023
Pauline	Rachel	Hoadley	RA	1400	5/17/2023
Grover	Tyler	Rodgers	RA	2500	5/17/2023

Felix	Alberto	Howes	RA	1399	5/17/2023
Moore	Aidan	Halekas	RA	1400	5/17/2023
Armstrong	Cole	DeRoo	RA	1400	5/17/2023
Payne	Jacob	DeRoo	RA	1400	5/17/2023
Maxton	Robert	Meurice	QIS-RA	4500	5/17/2023
Corona	James	Meurice	QIS-RA	4500	5/17/2023
Griffin	Philip	DeRoo	Summer RA	1400	5/17/2023
Quaid	Salvatore	Rodgers	Summer RA	1400	5/17/2023
GSAC		Grad Map	Mentor Mentee	3507	FY 2023
Schrock	Katrina	Prineas	Summer RA	1373	6/30/2023

SERVICE

1. Department

- -Director of Graduate Studies: Fall 2019 – 2024
- -Graduate Recruitment and Admissions Committee: Fall 2019 – 2024
- -Graduate Affair and Curriculum Committee: Fall 2019 – 2024t
- -Graduate Student Advisory Committee Director: Fall 2019 - 2024
- -Departmental Executive Committee: Fall 2019 - 2024
- -Particle Theory Search Committee: Spring 2024
- -Plasma Theory Search Committee: Fall 2007 - Spring 2008
- -GAANN Grant PI for Department: 2006
- -Outreach Co-Director (with Dale Stille): since 2005 –
- -Café Scientifique Iowa City Founder/Organizer: Fall 2005 - 2021
- -Society of Physics Students Faculty Adviser: 1993 - 1998, Fall 2005-2018 (with Cornelia Lang)
- -Condensed Matter Theory Search Committee: Fall 2004
- -World Year Physics 2005 Committee: 2004 - 2005
- -Departmental Computing Committee: Nov 2003 – 2007
- -Retention Subcommittee: Oct 2003 - Fall 2005
- - Educational Operations - Sept 2003- Jan 2004
- -GAANN Grant PI for Department: 2005
- -GAANN Grant PI for Department: 2004
- -Colloquium Chair: 2003 - 2005, 2011 – 2012

- -Department Library Committee: Sept. 1990 - Present
- -Recruitment Talks/Travel 2-3 per year
- -Qualifying Exam Committee: 2000 – 2001
- -Recruitment Subcommittee: 1998-2000
- - Undergraduate Brochure development: 1998-1999
- -Departmental Executive Committee: 1997 - 1999, 2008-2010, 2014-2016
- - Department Computer Advisory Committee 1997-1998
- -Undergraduate Liaison: 1991-1996
- -Departmental Ad Hoc Strategic Planning Committee, Chair, 1997-1998
- -Departmental Graduate Admissions Committee: Sept. 1992,1993,1994,1995, 1996, 2011 – 2024
- - Undergraduate Computing Facilities Adviser: Spring 1993 to – 1996
- -High Energy Theory UNIX Computer System Administrator (Sept. 1989 - Oct. 2003)
- - Preprint Library Administrator: May 1991-June 1997;
- -Physics Department Educational Operations: Sept. 1991 - 1993
- -Physics Department Search Committee (Laser Center): 1993
- -Physics Department PPB Committee: 1990 - 1991

2. University

- CLAS Career Bootcamp: Aug 2021, Aug 2022, Aug 2023
- CLAS Outreach and Engagement Task Force:

2018 -2019 University of Iowa

- Library Review: May 2021
- UCM Search Committee: May-

  June 2014
- LSAMP Iowa: Advisory Board

  2013- 2024
- Certificate for Clinical and Translational Sciences Administrator: 2013-2018
- Co-developed the Undergraduate Certificate for Clinical and Translational Sciences 2012-2013
- Co-developed the new Fast-Track Program in Biochemistry and Microbiology for BS-PhD 2011-2012
- Educational Advisory Committee for Institute of Clinical Translational

  Science: 2011-2013
- Office of Provost Coordinating Council on STEM: 2011
- Executive Vice President/Provost Search Committee: 2007
- Co-Investigator of the Iowa Sciences

  Academy , 2018 – 2024
- Co-Director of the Iowa Biosciences

  Academy: 2005- 2018
- Opportunity at Iowa Speaker/Presenter (2004): 10 May, 23 Sept, 22 Oct, 4 Nov, 18 Nov, 3 Dec.
- Belin Center, Information and Technology Fair (1998,1999,2001,

  2004, 2005, 2007)
- Hawkeye Visiting Days Participant (1998-1999)
- Opportunity at Iowa Search

  Committee 1998
- Presidential "Core Values"

  Committee 1997
- Collegiate Faculty Developmental Leave Selection

  Committee, 1997

- Presidential Scholars Selection Committee (1996 - 1998)
- FIPSE planning committee (1995-1997)
- Search Committee for Director of Special Support Services: 1994

3. Professional

- Theoretical National Society of Black Physicists: NSBP Net monitor (1993 - 2002)
- National Society of Black Physicists: Sloan Fellowship committee (2005)
- National Science Foundation Review Panel: Jan 2005
- Reviewer for Mathematical Reviews (since 1990)
- Referee for International Journal of Modern Physics (since 1991)
- Referee for Physical Review Letters and Physical Review (since 1986)
- Book Reviewer for Norton Publications (since 1995)
- Book Reviewer for Saunders College Publishing (1998)
- Referee for IOP Publications (since 1998)
- ACT test reviewer (1995-2003)
- GRE test writing and reviewer, Physics Test (1995-2003)
- Book Reviewed: "Quantum Field Theory" by L.H. Ryder, in the American Scientist, Jan. 1986
- Member American Physical Society (since 1985)
- Member National Society of Black Physicists (since 1990)
- Member American Association of Physics Teachers

4. Public Engagement (Selected)

- Speaker: Family Adventures in Science Oct. 2005, Apr. 2006, Oct. 2006
- Speaker: Café Scientifique "So What Is String Theory Anyway?" 8 Dec. 2005
- Hawk Eyes On Science - Presenter/demonstrations, more than 100 presentations to schools and organizations since 2005. More than 20 events from 2019 - 2024
- Weekly Tutoring: MESA/Iowa City Community School District (Fall 2000 - 2017)
- "Minority Speaker Forum:" Oct, 2004, City High School, Iowa City, IA

    - Organizer for Davenport Schools System: SECME - Accurate Reckoning Program Fall 2003 – 2005
- Judge: LSAMP, STEM Conference, Baton Rouge, LA (Nov. 2002)
- Invited Talk: "The Nature of Physical Theories," John Hersey High School, Arlington, IL (May, 2001)
- Invited Talk: "The Nature of Physical Theories," Northwest Junior High, Coralville, IA (1999 - 2004)
- Job Shadowing: Jessica Till, Northwest Junior High, Iowa City, IA (May, 1998)
- Job Shadowing: Thomas Cox, Muscatine High School, Muscatine, IA (May, 1997)
- Commencement Address: John Baptist De Sable High School (with Prof. Victor Rodgers), Chicago, IL (June, 1995)
- Invited Talk: "The Nature of Physical Theories," Regina High school, Iowa City, IA (May, 1995)
- Science Fair Judge, Columbia, MS (March, 1994)
- Pen-Pal Partnership Participant: University of Iowa (1990-1993)
- Invited Talk: King-Perkins Elementary School, Des Moines, IA (Mar. 1992)
- Invited Talk: "A Brief History of Science and Society", Great Books Workshop, Iowa City, IA (June, 1993)
- Invited Talk: Invention Convention, Des Moines Area Schools (March, 1991)
- Invited Talk: King-Perkins Elementary School, Des Moines, IA (March, 1991)
- Invited Talk: Burlington High School, Burlington, IA. (April, 1991)
- Invited Talk: Burlington High School, Burlington, IA. (Apr. 1992)
- Invited Talk: Donnelson High School, Donnelson, IA, (May, 1991)
- Invited Talk: J. Phillip Randolph High School, NY, NY (Sept. 1988)
- Mentor Program Participant: SUNY Stony Brook (1987-1989)
- Peer-Tutor, Higher Educational Opportunity Program: Syracuse University (1981-1982)