Ben Andrew Olsen
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Lewis & Clark College
615 S Palatine Hill Rd, MSC 15
Portland, OR 97219

Professional Appointments

2023– **Assistant professor** Lewis & Clark College, Department of Physics

2017–2024 **Director of curriculum and instruction** Tapia Say STEM Camps, Rice University

2018–2023 **Assistant professor** Yale-NUS College, Division of Science (Physics)

2016–2018 **Postdoctoral research fellow** University of Toronto, Department of Physics

2015–2016 **Physicist** AOSense, Inc., Inertial Sensors Divison, Sunnyvale, CA

2011–2015 **Postdoctoral research associate** Rice University,
Department of Physics & Astronomy and Rice Quantum Institute

Education

2011 **Ph. D. in Physics,** Princeton University

2006 **B. S. with Honors in Physics,** California Institute of Technology

Teaching Experience

At Lewis & Clark College

2026 *Phys 499: Independent Study—Atomic Physics*
Phys 499: Independent Study—Advanced QM: Condensed Matter

2026 *Phys 400: Advanced Lab & Colloquium*

2025 *Phys 321: Quantum Mechanics (Text: McIntyre)*

2025–26 *Phys 491: Honors Research*

2025, 26 *Phys 490: Independent Research*

2025 *CS 499: Independent Research*
Co-Advised with Alain Kägi

2025 *Phys 300: Advanced Lab*

2024 *Phys 331: Advanced Electricity & Magnetism (Text: Griffiths)*

2024, 25, 26 *Phys 201: Experimental Methods in Physical Sciences*

2023, 24, 25 *Phys 151: Motion, Phys 151L (Text: Young & Freedman)*
Introductory Physics with Lab

2023 *Phys 380: Physics In Curved Spacetime (Text: Hartle)*

At Yale-NUS College

2022 *YSC3221: Introduction to Electrodynamics (Text: Griffiths)*

2019, 2022 *YSC4223: Physics in Curved Spacetime (Text: Hartle)*

2018–2022 *YCC2137: Scientific Inquiry 2* (9 total sections)
Deep Inquiry 1 (Experimentation) Track Lead in 2019, 2020

2020, 2021 *YSC2246: Experimental Methods in Physical Sciences*
Co-Taught with S. Presolski in 2020

2021 *YSC2251: Science Skills Workshop*

2020 *YSC3224: Statistical Thermodynamics*

2019 *YSC2214: Introduction to Optics & Imaging (Text: Hecht)*

Elsewhere

2018-2024 Director of curriculum and instruction, *Say STEM Camps, Tapia Center*, Rice University

2017 Instructor, *Phy 326: Advanced Physics Laboratory*, University of Toronto

2016–2017 Lead physics instructor, curriculum development, *Say STEM Camp, Tapia Center*, Rice University

2015 Guest lecturer, *Physics 202: Modern Physics*, Rice University

2013–2015 Guest lecturer, *Physics 311/312: Introduction To Quantum Physics I/II*, Rice University

2010–2011 Assistant for instruction, *ISC 231: An Integrated, Quantitative Introduction to the Natural Sciences, Laboratory Section*, Princeton University

2009–2010 Instructor, *Physics & Science Reasoning*, Princeton University Preparatory Program

2005 Teaching assistant, *Ph 6: Physics Laboratory*, California Institute of Technology

2005 Teaching assistant, *Ph 5: Analog Electronics*, California Institute of Technology

Students Mentored

At Lewis & Clark College

Experimental physics research 5 undergraduate students (2 honors theses), 3 secondary school students

Experimental interdisciplinary research 2 undergraduate students (1 honors thesis)

Physics major/minor advising 15 undergraduate students

Pre-major advising 5 new undergraduate students in 2025–26, 4 in 2024–25

Elsewhere

Experimental physics research 1 graduate, 21 undergraduate (6 capstone), 3 secondary school students

Physics major advising 7 students (5 at Yale-NUS College, 2 at University of Toronto)

Pre-major advising 9 students 2022-23, 9 students 2021–22, 9 students 2020–21, 10 students 2019–20, 4 students 2018–19

Peer reviewed (*undergraduate student authors) 552 total citations, h-index 10, Google Scholar Profile

18. *Efficient Water-cooled Bitter-type electromagnet for Zeeman slowing in cold-atom experiments*
R. Koirala* and **B. A. Olsen**
Review of Scientific Instruments 97, 033205 (2026) doi:10.1063/5.0309624

17. *Time-local stochastic equation of motion for solid ionic electrolytes*
A. Rodin, **B. A. Olsen**, A. Ustyuzhanin, and A. Maevskiy
Physical Review Research **7**, 033120 (2025) doi:10.1103/jnzr-q953

16. *Local-time formula for dissipation in solid ionic electrolytes*
A. Rodin, **B. A. Olsen**, A. Ustyuzhanin, A. Maevskiy, and K. Noori
Physical Review Research **6**, 033244 (2024) doi:10.1103/PhysRevResearch.6.033244

15. *Activation in solid ionic electrolytes*
K. Noori, **B. A. Olsen**, A. Rodin
Physical Review Research **6**, 023322 (2024) doi:10.1103/PhysRevResearch.6.023322

14. *Dissipation and diffusion in one-dimensional solids*
H. Mahalingam, **B. A. Olsen**, A. Rodin
Physical Review Research **5**, 033044 (2023) doi:10.1103/PhysRevResearch.5.033044

13. *Emergent s-wave interactions between identical fermions in quasi-one-dimensional geometries*
K. G. Jackson, C. J. Dale, J. Maki, K. G. S. Xie, **B. A. Olsen**, D. J. M. Ahmed-Braun, S. Zhang, and J. H. Thywissen
Physical Review X **13**, 021013 (2023) doi:10.1103/PhysRevX.13.021013

12. *Minimal model of drag in one-dimensional crystals*
H. Mahalingam, Z. W. Yap*, **B. A. Olsen**, A. Rodin
Physical Review Research **5**, 013053 (2023) doi:10.1103/PhysRevResearch.5.013053

11. *Microscopic theory of thermalization in one dimension with nonlinear bath coupling*
A. Rodin, **B. A. Olsen**, M. Choi*, and A. Tan*
Physical Review Research **4**, 033057 (2022) doi:10.1103/PhysRevResearch.4.033057

10. *Probing open- and closed-channel p-wave resonances*
D. J. M. Ahmed-Braun, K. G. Jackson, S. Smale, C. J. Dale, **B. A. Olsen**, S. J. J. M. F. Kokkelmans, P. S. Julienne, and J. H. Thywissen
Physical Review Research **3**, 033269 (2021), doi:10.1103/PhysRevResearch.3.033269

9. *Observation of a Transition Between Dynamical Phases in a Quantum Degenerate Fermi Gas*
S. Smale, P. He, **B. A. Olsen**, K. G. Jackson, H. Sharum, S. Trotzky, J. Marino, A. M. Rey, and J. H. Thywissen
Science Advances **5**, eaax1568, (2019) doi:10.1126/sciadv.aax1568

8. *Observation of Quantum-Limited Spin Transport in Strongly Interacting Two-Dimensional Fermi Gases*
C. Luciuk, S. Smale, F. Böttcher, H. Sharum, **B. A. Olsen**, S. Trotzky, T. Enss, and J. H. Thywissen
Physical Review Letters **118**, 130405 (2017) doi:10.1103/PhysRevLett.118.130405

7. *1D to 3D Crossover of a Spin-Imbalanced Fermi Gas*
M. C. Revelle, J. A. Fry, **B. A. Olsen**, and R. G. Hulet
Physical Review Letters **117**, 235301 (2016) doi:10.1103/PhysRevLett.117.235301

6. *Phase diagram of a strongly interacting spin-imbalanced Fermi gas*
B. A. Olsen, M. C. Revelle, J. A. Fry, D. E. Sheehy, and R. G. Hulet
Physical Review A **92**, 063616 (2015) doi:10.1103/PhysRevA.92.063616

5. *Spin-velocity correlations of optically pumped atoms*
R. Marsland III*, B. H. McGuyer, **B. A. Olsen**, and W. Happer
Physical Review A **86**, 023404 (2012) doi:10.1103/PhysRevA.86.023404

4. *Cusp kernels for velocity-changing collisions*
B. H. McGuyer, R. Marsland III*, **B. A. Olsen**, and W. Happer
Physical Review Letters **108**, 183202 (2012) doi:10.1103/PhysRevLett.108.183202

3. *Optical pumping and spectroscopy of Cs vapor at high magnetic field*
B. A. Olsen, B. Patton, Y.-Y. Jau, and W. Happer
Physical Review A **84**, 063410 (2011) doi:10.1103/PhysRevA.84.063410

2. *Transfer of spin angular momentum from Cs vapor to nearby Cs salts through laser-induced spin currents*
K. Ishikawa, B. Patton, **B. A. Olsen**, Y.-Y. Jau, and W. Happer
Physical Review A **83**, 063410 (2011) doi:10.1103/PhysRevA.83.063410

1. *Temperature-insensitive laser frequency locking near absorption lines*
N. Kostinski, **B. A. Olsen**, R. Marsland III*, B. H. McGuyer, and W. Happer
Review of Scientific Instruments **82**, 033114 (2011) doi:10.1063/1.3574221

Grants, Awards, & Press

2026 **Bibliographic Research & Writing Stipend**
Lewis & Clark College Library
Co-PI with P. Abbaspour (Library): $1000

2025 **Faculty Development Grant: Scholarly Conversation Group**
Lewis & Clark College Dean's Office
Co-PI with A. Rader (Environmental Studies) and T. Burkhard (Biology): $500

2025 **Article: A Quantum Leap for Physics Students**
Lewis & Clark Newsroom (Article Link)

2024 **Murdock Poster Prize for Physics and Engineering** M. J. Murdock Charitable Trust
Custom Electromagnets: Design, Simulation, Construction, Testing
Awarded to undergraduate research mentee Emma Falk

2024–2026 **Launching Early-Career Academic Pathways in the Mathematical and Physical Sciences** National Science Foundation
Ultracold Atoms for Quantum Science
PI: $249,684

2022 **Finalist: Yale-NUS College Junior Faculty Teaching Award**

2022–2025 **Academic Research Fund Tier 2** Ministry of Education, Singapore
Photoswitchable DTE Ligands for Spatiotemporal Catalytic Control
Co-PI: SGD$465,000 (of total SGD$1,273,543)

2022–2023 **Teaching Engagement Grant** Yale-NUS College
Experiential learning aids in advanced physics electives using tangible elements
PI: SGD$3,660

2021–2023 **Quantum Engineering Programme** National Research Foundation of Singapore, DSO National Laboratories, Singapore
Quantum Assisted Navigation and Magnetic Sensing
Co-PI: SGD$300,000 (of total SGD$7,802,627)

2021–2024 **Internal Seed Grant** Yale-NUS College
Many-body quantum spin dynamics of Fermi and Bose gases of lithium
PI: SGD$179,232

2021–2022 **Shared Equipment Grant** Yale-NUS College
High-power laser sources for experimental sciences at Yale-NUS
PI: SGD$96,594

2020–2022 **Student Research Special Pocket Research Grant (x3)** Yale-NUS College
Direct-current electromagnet field simulations/design, Automated image acquisition and compositing system, Automated laboratory monitoring system
PI: SGD$4,500

2019 **Eleanor P. Eells Award for Program Excellence**
American Camp Association, for Say STEM Camp at Rice University (Citation Link)

2019 **Inspiring Programs in STEM Award**
INSIGHT Into Diversity, for Say STEM Camp at Rice University (Citation link)

2019–2020 **Shared Equipment Grant** Yale-NUS College
Optical frequency reference for experimental sciences at Yale-NUS
PI: SGD$96,000

2017 **Article: STEM Camps Showcase PBL**
National Science Teachers Association Reports, September, 2017 (Article link)

Presentations

Seminars & Colloquia (24 total) Selected recent:

Oct 2025 Portland State University, Physics Department, Portland, OR

Oct 2024 Lewis & Clark College Chemistry Department, Portland, OR

Apr 2024 Society of Physics Students Chapter 17 Meeting, Portland, OR

Feb 2024 Reed College Physics Department, Portland, OR

Apr 2023 Lewis & Clark College Physics Department, Portland, OR

Contributed Conference Presentations (27 total) Selected recent:

Feb 2026	*Oregon Academy of Sciences 2026 Meeting (undergraduate student presenter), Western Oregon University, Monmouth, OR
Jan 2026	*SICB 2026 (undergraduate student presenter; interdisciplinary project), Portland, OR
Nov 2025	*MCSR Conference (undergraduate student presenter), Vancouver, WA
Jun 2025	*APS DAMOP (4 undergraduate student presenters), Portland, OR
Nov 2024	*MCSR Conference (2 undergraduate student presenters; *Physics and Engineering* Murdock Poster Prize), Vancouver, WA
Jun 2024	APS DAMOP, Fort Worth, TX
Jun 2023	APS DAMOP, Spokane, WA
Sep 2022	*Institute of Physics Singapore (4 undergraduate student poster presenters), NTU, Singapore

SERVICE

Outreach

Dec 2025	*APS Quantum To Go* with 5 HS classes from Elmira, OR
Apr 2025	*APS Physicist To Go* with 5 HS classes from Elmira, OR
Apr 2025	*Skype a Scientist* with middle-school class from Sartell, MN
Nov 2024	Led student volunteers to manage interactive physics demos for OMSI Teen night
May 2024	*Skype a Scientist* with HS class from Salinas, CA
Oct 2023	*APS Physicist to Go* with HS class from Montebello, CA
Oct 2023	Co-organized Annular Eclipse Viewing Event with LC Physics Club
Feb 2020	Organized Singapore Science and Engineering Fair special award judging
Jun 2019	QCamp at NUS Centre for Quantum Technologies: Laser cooling
May 2019	Co-organized Event Horizon Telescope results viewing party

Referee & Panels

Mar 2025	*Physical Review A* referee
Feb 2026	NSF review panel
Dec 2025	*Physical Review Applied* referee
Sept 2025	*Physical Review Letters* referee
Jul 2025	NSF review panel

Mar 2025	NSF ad hoc review
Feb 2025	*Physical Review A* referee
Jan 2025	NSF review panel
Mar 2024	NSF ad hoc review
Aug 2021	*Nature Physics* referee
Apr 2020	*Physical Review Letters* referee
Aug 2019	*Physical Review Research* referee
Dec 2016	*Physical Review Letters* referee

Institutional Service at Lewis & Clark College

Spring 2026	Lewis & Clark Physics Department Colloquium Series Organizer
Spring 2026	LC Admitted Student Program: 2 Luncheons, 3 Lab Tours, 2 Class Visits
Spring 2026	*Mary Dimond Scholarship* Selection Committee
Spring 2026	*Associate Dean for Faculty Development* Nomination Committee
2025–26	*Festival of Scholars and Artists* Organizing Committee
Spring 2025	*Senior Recognition Award* Selection Committee
Spring 2025	LC Admitted Student Program: 5 Lab Tours, College Counselor Breakfast
Spring 2024	LC Admitted Student Program: Panel Discussion, 3 Lab Tours, and College Counselor Breakfast