

Dr. David Kordahl

Centenary College of Louisiana
Assistant Professor of Physics

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Educational Information

Arizona State University (2015-2020). Ph.D. in physics. Electron microscopy theory emphasis.
University of Kansas. (2008-2011). M.S. in physics. High-energy theory emphasis.
Wartburg College. (2004-2008). B.A. degrees in physics, math, music, and English.

Scientific Works

- David Kordahl, Duncan T.L. Alexander, and Christian Dwyer, “Waveguide Modes Spatially Resolved by Low-Loss STEM-EELS,” *Physical Review B*, March 2021.
DOI: [10.1103/PhysRevB.103.134109](https://doi.org/10.1103/PhysRevB.103.134109).
- David Kordahl, *Excursions in Electron Energy-Loss Spectroscopy*. Doctoral Dissertation, Arizona State University. ProQuest Dissertations Publishing, 2020.
ISBN: [9798664755688](https://www.proquest.com/docview/9798664755688).
- David Kordahl, Lance W. Q. Xu, Shery L. Y. Chang, and Christian Dwyer, “Prospects for detecting individual defect centers using spatially-resolved energy loss spectroscopy,” *Physical Review B*, October 2019. DOI: [10.1103/PhysRevB.100.134103](https://doi.org/10.1103/PhysRevB.100.134103).
- Christian Dwyer, David Kordahl, Weiqing Xu and Shery L.Y. Chang, “Prospects for Spatially-Resolved EELS of Atomic Point Defects,” *Microscopy and Microanalysis* 25 (S2), August 2019. DOI: [10.1017/S1431927619003702](https://doi.org/10.1017/S1431927619003702).
- David Kordahl and Christian Dwyer, “Harnessing Shape Effects for Adsorbate Signal Enhancement in Vibrational EELS,” *Microscopy and Microanalysis* 25 (S2), August 2019. DOI: [10.1017/S1431927619003775](https://doi.org/10.1017/S1431927619003775).
- David Kordahl and Christian Dwyer, “Enhanced vibrational electron energy-loss spectroscopy of adsorbate molecules,” *Physical Review B*, March 2019.
DOI: [10.1103/PhysRevB.99.104110](https://doi.org/10.1103/PhysRevB.99.104110).

Conference Presentations

- Southeastern Section of the American Physical Society 2020*, November 5-6, 2020. Virtual meeting. *Condensed Matter and Materials Physics* session presentation: “Cherenkov Excitation of Waveguide Modes in the Electron Microscope.”
- Microscopy & Microanalysis*, August 4-8, 2019. Portland, Oregon. *Current Trends and Challenges in Electron Energy-Loss Spectroscopy* platform presentation: “Harnessing Shape Effects for Adsorbate Signal Enhancement in Vibrational EELS.”
- American Physical Society March Meeting*, March 5-9, 2018. Las Angeles, California.
Poster: “Shape Effects in Vibrational EELS (2).”
- Enhanced Data Generated by Electrons 2017*, May 14-19, 2017. Okuma, Okinawa, Japan.
Poster: “Shape Effects in Vibrational EELS (1).”

Popular Essays and Reviews

- “The Slightly Wrong Physics of Spinning Muons,” *3QuarksDaily*, April 2020.
- “The Limits of Conspiracy Debunking,” *3QuarksDaily*, March 2020.
- “Glassholes Revisited,” *3QuarksDaily*, February 2020.
- “Science and *The Phenomenon*,” *3QuarksDaily*, January 2020.
- “The World and Its Mask,” *3QuarksDaily*, December 2020.
- “Easy to Defend, Hard to Believe,” *3QuarksDaily*, November 2020.
- “Tesla at the Movies,” *3QuarksDaily*, October 2020.
- “Things Hang Together, Things Fall Apart,” *3QuarksDaily*, September 2020.
- “Atoms for Aliens?” *3QuarksDaily*, August 2020.
- “Twilight of the Quantum Idols,” *3QuarksDaily*, July 2020.
- “Inventing the Universe,” *The New Atlantis*, Number 61, Winter 2020.
- “Steven Weinberg Glimpses the Promised Land,” *The New Atlantis*, Number 57, Winter 2019.
- “Higher Laughter: On Jim Holt,” *Los Angeles Review of Books*, October 2018.
- “Did Thomas Kuhn Kill Truth?” *The New Atlantis*, Number 55, Spring 2018.
- “Pop Goes the Physics,” *The New Atlantis*, Number 52, Spring 2017.
- “Does Science Need Hollywood?” *Los Angeles Review of Books*, December 2015.
- “Unlocking the Treasures,” *Skeptical Inquirer*, Volume 39, Number 6, December 2015.
- “Psychedelics for Suburbanites,” *Motherboard—VICE*, November 2015.
- “The Prophets Leave Hometown: Three Physicists Try Philosophy,” *Los Angeles Review of Books*, June 2015.
- “Data Grubbers: Epidemiology, Sabermetrics, Octopus Paul, and You,” *Los Angeles Review of Books*, January 2015.
- “How Physics is Like Three-Chord Rock,” *Nautilus*, Issue 14—Mutation, June 2013.

“Something in the Water: *Chinatown* and L.A.’s Orignary Sin,” *Motherboard—VICE*, September 2013.

“A Visit to the Shell of the Bomb,” *Motherboard—VICE*, September 2013.

“Fairy Tale Physics and Poisoned Cocktails,” *Las Angeles Review of Books*, September 2013.

“Quantum Absolutism: Lee Smolin’s *Time Reborn*,” *Las Angeles Review of Books*, July 2013.

Professional Experience

Centenary College of Louisiana, Assistant Professor of Physics (Fall 2020-present)

Physics 302, Introduction to Modern Physics: Course instructor
·Spring 2021, one section (with lab)

Physics 104, Physics I: Course instructor
·Spring 2021, one section

Physics 104, Physics II: Course instructor
·Fall 2020, one section

Physics 115, Physics II Laboratory: Course instructor
·Fall 2020, three sections

Arizona State University, Graduate Student (2015-2020)

Graduate Research Assistant: Fall 2016-Spring 2020

Physics 212, Physics II: Recitation instructor
·Spring 2017, three sections
·Fall 2015, five sections
·Spring 2016, five sections

Physics 132, Physics II Laboratory: Lab instructor
·Summer B 2016, one section

Physics 121, Physics I: Recitation instructor
·Summer A 2016, one section

Mesa Public Schools, Science Teacher (2011-2015)

General Physics: Course instructor
·2014-2015 school year, one section
·2013-2014 school year, five sections
·2012-2013 school year, three sections

Earth and Space Science: Course instructor
·2014-2015 school year, four sections

Essential Elements of Science: Course instructor
·2012-2013 school year, two sections

Algebra 1: Long-term substitute instructor
·2011-2012 fourth quarter, four sections

Various: Roaming substitute in science, math, music, and English
·2011-2012 second and third quarters

University of Kansas, Graduate Student (2008-2011)

Graduate Student Fellow in Curriculum Development for Introductory Astronomy
·Spring 2011: Student Peer-Review Administrator, Assignment Writer

Physics 111, Introductory Mechanics: Lab instructor
·Fall 2010, three sections

Physics 112, Electricity and Magnetism: Lab instructor
·Summer 2010, two sections

Physics 212, Engineering Electricity and Magnetism: Lab instructor
·Spring 2010, three sections
·Fall 2009, three sections

Physics 211, Engineering Mechanics: Lab instructor
·Spring 2009, three sections
·Fall 2008, three sections

Undergraduate Employment (2004-2008)

Physics Lab Assistant and Grader
·Fall 2007-Spring 2008: General Physics, homework grader
·Fall 2005-Spring 2006: Classical Physics, lab assistant and lab grader

Wartburg Community Symphony Program Annotator
·Fall 2007-Spring 2008, five concerts

Indiana University Research Experience for Undergraduates (REU)
·Summer 2007: Student researcher

Opinion columnist for The Trumpet (Wartburg College student newspaper)
·Spring 2005, bi-weekly columnist
·Spring 2006, bi-weekly columnist

Skills

Programming: Current user of Matlab/Octave.
Former user of Mathematica, Igor Pro, C++, Python.

Typesetting: LaTeX, Microsoft Office, Libre Office.

Web design: HTML and CSS. Wordpress Suite.

Music: violin, piano, and trumpet performance.

Grants and Awards

Principal Investigator, Departmental Enhancement Grant LEQSF(2020-21)-ENH-DE-02,
“Enhanced Laboratory for Optics/Modern Physics”
Funds (\$14,443) for updating lab equipment at Centenary College of Louisiana

Wally Stoelzel Physics Fellowship (2019)
Department academic award at Arizona State University Department of Physics

ETS Recognition of Excellence (2011)
Content mastery award for top 15% of educators in physics, math, and English

E.E. Slossen Award for Teaching Excellence (2010)
Department award for top teaching assistant, University of Kansas Physics Department

Physics Student of the Year (2008)
Annual award for outstanding physics student, Wartburg College Physics Department

Presser Music Scholar (2007)
Annual award for outstanding music student, Wartburg College Music Department

Teaching Certifications

Arizona:

Standard Arts Education, PreK-12 Music
Standard Secondary Education, 7-12
Biology, Chemistry, English, Mathematics, Physics, General Science

South Dakota:

7-12 Mathematics Education, Science Education – Physics
K-12 Music Education – Instrumental
Endorsements: 5-8 Middle Level Education: Language Arts, Mathematics; 7-12
Language Arts Composition/Grammar, Literature; 7-12 Science Education:
Biology, Chemistry; K-12 Music Education – Vocal Music