

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.

Research Highlights

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).

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 Abstracts (* indicates self as presenting author)

David Kordahl, Duncan Alexander, and Christian Dwyer, “Spatially-resolved STEM-EELS of waveguide modes,” *M&M 2021 Meeting*, August 2021. Abstract: *Microscopy and Microanalysis 27* (S1), DOI: [10.1017/S143192762100101X](https://doi.org/10.1017/S143192762100101X).

Shery Chang, Haotian Wen, David Kordahl, and Christian Dwyer. “Measuring NV Centers in Diamond Nanoparticles using Electron Energy Loss Spectroscopy,” *M&M 2021 Meeting*, August 2021. Abstract: *Microscopy and Microanalysis 27* (S1), DOI: [10.1017/S1431927621004499](https://doi.org/10.1017/S1431927621004499).

*David Kordahl, “Historical Flirtations with the Physics of the Paranormal,” *2021 AAPT Virtual Summer Meeting*, July/August 2021. Abstract: [PS.E-MO-10.04](https://www.aapt.org/abstracts/2021/PS.E-MO-10.04). Video: [YouTube](https://www.youtube.com/watch?v=...).

*David Kordahl, “Cerenkov Excitation of Waveguide Modes in the Electron Microscope,” *87th annual meeting of the Southeast Section of the APS*, Volume 65, Number 19, November 2020. Abstract: [F03.00006](#).

Christian Dwyer, David Kordahl, Weiqing Xu and Shery L.Y. Chang, “Prospects for Spatially-Resolved EELS of Atomic Point Defects,” *M&M 2019 Meeting*, August 2019. Abstract: *Microscopy and Microanalysis* 25 (S2), DOI: [10.1017/S1431927619003702](#).

*David Kordahl and Christian Dwyer, “Harnessing Shape Effects for Adsorbate Signal Enhancement in Vibrational EELS,” *M&M 2019 Meeting*, August 2019. Abstract: *Microscopy and Microanalysis* 25 (S2), DOI: [10.1017/S1431927619003775](#).

*David Kordahl and Christian Dwyer, “Particle Shape Effects in Vibrational Electron Energy-Loss Spectroscopy” (Poster 2). *APS March Meeting*, March 2018. Abstract: [G60.339](#).

*David Kordahl and Christian Dwyer, “Particle Shape Effects in Vibrational EELS” (Poster 1). *Enhanced Data Generated by Electrons 2017*, May 2017. Abstract: [P0009](#).

Grants and Awards

Principal Investigator, Departmental Enhancement Grant (2020)
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

Presser Music Scholar (2007) and Physics Student of the Year (2008)
Annual award for outstanding music student, Wartburg College Music Department
Annual award for outstanding physics student, Wartburg College Physics Department

Colloquia

“If the microscopes work, what’s the use of theory?” Marietta College, Physics Colloquium Series, January 2020.

“Enhancing Vibrational Signals from Adsorbed Molecules in Electron Energy-Loss Spectroscopy,” Arizona State University, Condensed Matter Journal Club, April 2019.

Popular Essays and Reviews

- [“Which Scientific Bets Should Be Declined?”](#) *3QuarksDaily*, January 2022.
- [“Philip Anderson’s Emergence as Himself,”](#) *3QuarksDaily*, November 2021.
- [“Scavenging Science: On John Horgan and Tao Lin,”](#) *3QuarksDaily*, September 2021.
- [“Meat and Pets: A Double Feature,”](#) *3QuarksDaily*, July 2021.
- [“The Movie that Watches You,”](#) *3QuarksDaily*, June 2021.
- [“Guessing with Physics,”](#) *3QuarksDaily*, May 2021.
- [“The Slightly Wrong Physics of Spinning Muons,”](#) *3QuarksDaily*, April 2021.
- [“The Limits of Conspiracy Debunking,”](#) *3QuarksDaily*, March 2021.
- [“Glassholes Revisited,”](#) *3QuarksDaily*, February 2021.
- [“Science and *The Phenomenon*,”](#) *3QuarksDaily*, January 2021.
- [“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 Original Sin,” *Motherboard—VICE*, September 2013.
- “A Visit to the Shell of the Bomb,” *Motherboard—VICE*, September 2013.
- “Fairy Tale Physics and Poisoned Cocktails,” *Los Angeles Review of Books*, September 2013.
- “Quantum Absolutism: Lee Smolin’s *Time Reborn*,” *Los Angeles Review of Books*, July 2013.

Professional Experience

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

Physics 105, Physics II: Course instructor

- Fall 2021, two sections
- Fall 2020, one section

Physics 115, Physics II Laboratory: Course instructor

- Fall 2021, three sections
- Fall 2020, three sections

Physics 302, Introduction to Modern Physics: Course instructor

- Spring 2021, one section (with lab)

Physics 104, Physics I: Course instructor

- Spring 2021, one section

Fellowship United Methodist Church (May 2021-present)

Music director (pianist, choir director)

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, Python, and COMSOL Multiphysics,
 Former user of Mathematica, Igor Pro, and C++.

Typesetting: LaTeX, Microsoft Office, Libre Office.

Web design: HTML and CSS. Wordpress Suite.

Music: violin, piano, and trumpet performance.

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