

Charles D. Lane

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1 Education

1994–2000 Indiana University, Bloomington, Indiana

Ph.D. awarded December 2000

Thesis title: *Clock-Comparison and Muon Tests of Lorentz Symmetry*

Major: Physics (Mathematical)

Minors: Mathematics, High-Energy Physics

1990–1994 University of Tennessee, Knoxville, Tennessee

B.S. awarded May 1994

Major: Engineering Physics

1986–1990 Sullivan South High School, Kingsport, Tennessee

High School Diploma awarded May 1990

2 Professional Experience

August 2007–June 2013 Chair of Department of Physics, Astronomy, and Geology,
Berry College, Mount Berry, Georgia.

January 2016–present Visiting Professor of Physics (courtesy appointment),
Indiana University, Bloomington, Indiana.

August 2007–present Associate Professor of Physics,
Berry College, Mount Berry, Georgia.

August 2001–July 2007 Assistant Professor of Physics,
Berry College, Mount Berry, Georgia.

August 2000–August 2001 Faculty Fellow in Physics,
Colby College, Waterville, Maine.

August 1994–July 2000 Associate Instructor,
Indiana University, Bloomington, Indiana.

3 Publications

(**Note:** Within my subfield of physics, it is common to list authors in alphabetical order without regard to contribution to the work; this is the practice used in all papers that I have written to date. For this document, however, I have tried to guess the order that our names would have been listed had we employed a typical contribution-based ordering schemes.)

3.1 Refereed Articles

Charles D. Lane, *Spacetime variation of Lorentz-violation coefficients at a nonrelativistic scale*, Phys. Rev. D **94** (2016) 025016 (arXiv:1605.00512 [gr-qc]).

- Charles D. Lane**, *Probing Lorentz violation with Doppler-shift experiments*, Phys. Rev. D **72** (2005) 016005 (hep-ph/0505130).
- Charles D. Lane**, Neil Russell, Alan Kostelecký, and Robert Bluhm, *Probing Lorentz and CPT violation with space-based experiments*, Phys. Rev. D **68** (2003) 125008 (hep-ph/0306190).
- Charles D. Lane**, Neil Russell, Alan Kostelecký, and Robert Bluhm, *Clock-Comparison Tests of Lorentz and CPT Symmetry in Space*, Phys. Rev. Lett. **88** (2002) 090801 (hep-ph/0111141).
- Austin G.M. Pickering, **Charles D. Lane**, and V. Alan Kostelecký, *One-loop renormalization of Lorentz-violating electrodynamics*, Phys. Rev. D **65** (2002) 056006 (hep-th/0111123).
- V. Alan Kostelecký, **Charles D. Lane**, T. Okamoto, J.A. Harvey, and S.M. Carroll, *Noncommutative Field Theory and Lorentz Violation*, Phys. Rev. Lett. **87** (2001) 141601 (hep-th/0105082).
- D. Bear, R.E. Stoner, R.L. Walsworth, V.A. Kostelecký, and **Charles D. Lane**, *Limit on Lorentz and CPT Violation of the Neutron Using a Two-Species Noble-Gas Maser* Phys. Rev. Lett. **85** (2000) 5038 (physics/0007049).
- R. Bluhm, V.A. Kostelecký, and **Charles D. Lane**, *CPT and Lorentz Tests with Muons*, Phys. Rev. Lett. **84** (2000) 1098 (hep-ph/9912451).
- Charles D. Lane** and V.A. Kostelecký, *Nonrelativistic quantum hamiltonian for Lorentz violation*, J. Math. Phys. **40** (1999) 6245 (hep-ph/9909542).
- Charles D. Lane** and V.A. Kostelecký, *Constraints on Lorentz violation from clock-comparison experiments*, Phys. Rev. D **60** (1999) 116010 (hep-ph/9908504).

3.2 Published Conference Proceedings

- Charles D. Lane**, *Spacetime Variation of Lorentz-Violation Coefficients at Nonrelativistic Scale*, Proceedings of the 7th Meeting on CPT and Lorentz Symmetry, World Scientific, 2016 (arXiv:1607.05211 [hep-ph]).
- Charles D. Lane**, *Doppler-Effect Experiments and Lorentz Violation*, Proceedings of the 4th Meeting on CPT and Lorentz Symmetry, World Scientific, 2008.
- Charles D. Lane**, *An SME Analysis of Doppler-Effect Experiments*, in V.A. Kostelecký, ed., *Third Meeting on CPT and Lorentz Symmetry*, World Scientific, 2005 (hep-ph/0201039).
- Charles D. Lane**, *Atomic Probes of Noncommutative Field Theory*, in V.A. Kostelecký, ed., *Second Meeting on CPT and Lorentz Symmetry*, World Scientific, 2002 (hep-ph/0201039).
- Charles D. Lane**, *Bounds on CPT- and Lorentz-Violating Parameters*, in V.A. Kostelecký, ed., *CPT and Lorentz Symmetry*, World Scientific, 1999.

4 Professional Presentations

(**Note:** I have included only presentations that I gave myself. I have not included those given by collaborators, even in cases where we were co-authors of the work in question.)

4.1 International and National Meetings

- Spacetime Variation of Lorentz-Violation Coefficients at Nonrelativistic Scale*, contributed talk, 7th Meeting on CPT and Lorentz Symmetry, Bloomington, Indiana, June 2016.
- Clock-Comparison Tests of the Minimal SME on Earth and in Space*, Invited talk, IUCSS Summer School on the Lorentz- and CPT-Violating Standard-Model Extension, Bloomington, IN, June 2015.
- Nonrelativistic SME fermions and CC tests*, Invited talk, IUCSS Summer School on the SME, Bloomington, IN, June 2012.
- IBL Across the Curriculum* (with Eric McDowell, Dan Robb, Ron Taylor, Kevin Hoke, and Michael Papazian), Invited panel discussion, Legacy of R. L. Moore Conference, Austin, TX, July 2009.

Active Learning at Berry College (with Ron Taylor and Todd Timberlake), contributed talk, Legacy of R. L. Moore Conference, Austin, TX, July 2008.

Doppler-effect Experiments and Lorentz Violation, poster presentation, Fourth Meeting on CPT and Lorentz Symmetry, Bloomington, IN, August 2007.

Lorentz Violation and Electrodynamics, poster presentation, Gordon Research Conference on Research and Education in Electromagnetism, Mount Holyoke College, Massachusetts, June 2006.

The Equivalence Principle of General Relativity: A Simple Demonstration, contributed talk, AAPT Winter 2006, Anchorage, Alaska, January 2006.

Doppler-effect experiments and Lorentz symmetry, poster presentation, DAMOP 2005, Lincoln, Nebraska, May 2005.

An SME Analysis of Doppler-Effect Lorentz Tests, contributed talk, 3rd Meeting on CPT and Lorentz Symmetry, Bloomington, Indiana, August 2004.

Satellite-based clock-comparison tests of Lorentz and CPT symmetry, contributed talk, DAMOP 2004, Tucson, AZ, May 2004.

Crackerbarrel on New Physics and Astronomy Faculty Workshop, Panel member, American Association of Physics Teachers Summer 2003 National Meeting, Madison, WI, August 2003.

Testing Relativity with Clocks in Space, Invited talk, American Association of Physics Teachers Winter 2003 National Meeting, Austin, TX, January 2003.

Probing Noncommutative Geometry and Lorentz Violation with Atomic Tests, contributed talk, DAMOP 2002, Williamsburg, VA, May 2002.

Atomic Probes of Noncommutative Field Theory, contributed talk, 2nd Meeting on CPT and Lorentz Symmetry, Bloomington, Indiana, August 2001.

Atomic Tests of Lorentz Symmetry and Noncommutative Geometry, poster presentation, Gordon Research Conference on Atomic Physics, Williamstown, Massachusetts, June 2001.

Clock-Comparison Bounds on Lorentz Violation, contributed talk, DAMOP 2000, Storrs, Connecticut, June 2000.

Bounds on CPT- and Lorentz-Violating Parameters, contributed talk, Meeting on CPT and Lorentz Symmetry, Bloomington, IN, November 1998.

4.2 Seminars and Regional Meetings

Spacetime Variation of Lorentz-Violation Coefficients at Nonrelativistic Scale, invited talk to the IU Local Lorentz Group, Bloomington, IN, April 29, 2016.

Testing the Minimal SME by Comparing Clocks (Part 2), invited talk to the IU Local Lorentz Group, Bloomington, IN, February 22, 2016.

Testing the Minimal SME by Comparing Clocks (Part 1), invited talk to the IU Local Lorentz Group, Bloomington, IN, January 13, 2016.

A Small Pile of Ideas for Teaching Physics, Possibly Extensible to Other Subjects, invited talk for Discovery Learning seminar series at the University of Texas – Austin, October 14 2010.

Dark Matter through the Ages, plenary talk for MNS and Sigma Xi Annual Scientific Research Colloquium, Berry College, Georgia, April 2007.

Clock-Comparison Tests of Relativity on Earth and in Space, contributed talk, Georgia Academy of Science 81st Annual Meeting, Mount Berry, GA, March 2004.

Symmetry and Broken Symmetry in Physics, “Food for Thought” series, Berry College, Mount Berry, Georgia, April 2003.

Tachyons: Can anything move faster than light?, Physics and Astronomy Seminar, Berry College, Mount Berry, Georgia, February 2003.

Testing Relativity with Clocks in Space, Physics and Astronomy Seminar, Berry College, Mount Berry, Georgia, December 2002.

Constants that Aren't (Maybe), Physics and Astronomy Seminar, Berry College, Mount Berry, Georgia, September 2002.

Spacetime Symmetries, Physics Department Seminar, Colby College, Waterville, Maine, February 2001.

Spacetime Symmetries, interview for faculty position, Union College, Schenectady, New York, February 2001.

Spacetime Symmetries, interview for faculty position, Berry College, Mount Berry, Georgia, February 2001.

Spacetime Symmetries, interview for faculty position, Centre College, Danville, Kentucky, January 2001.

Spacetime Symmetries, interview for faculty position, Salem State College, Salem, Massachusetts, January 2001.

Clock-Comparison and Muon Tests of Lorentz Symmetry, Ph.D. Thesis Defense, Indiana University, Bloomington, Indiana, November 2000.

Spacetime Symmetries, interview for faculty position, Colby College, Waterville, Maine, May 2000.

Probing Lorentz Violation with Clock-Comparison Experiments, contributed talk, APS Ohio Section Spring Meeting, Cincinnati, Ohio, May 2000.

Lorentz-Breaking Bounds from Clock-Comparison Experiments, contributed talk, APS Ohio Section Fall Meeting, Dayton, Ohio, October 1999.

Bounds on CPT- and Lorentz-Violating Parameters, contributed talk, APS Ohio Section Fall Meeting, Akron, Ohio, November 1998.

Bounds on CPT- and Lorentz-Violating Parameters, contributed talk, APS Ohio Section Spring Meeting, Muncie, Indiana, April 1998.

Bounds on CPT and Lorentz Invariance, High-Energy Physics and Astrophysics Seminar, Indiana University, Bloomington, Indiana, December 1997.

5 Grants

Travel grant to attend 7th Meeting on CPT and Lorentz Symmetry, Bloomington, IN, June 2016 (approximately \$1600.00).

Travel grants from the Indiana University Center for Spacetime Symmetries. The amounts for the four trips were: \$322.51, \$168.00, \$654.00, and \$431.56 (total: \$1576.07).

Travel grant to attend IUCSS Summer School on the SME, Bloomington, IN, June 2012.

Educational Advancement Foundation grant to attend the 12th Annual Legacy of R.L. Moore Conference, Austin, TX, July 2009 (unknown total amount – everything was paid for before I saw the bills).

Educational Advancement Foundation grant to attend the 11th Annual Legacy of R.L. Moore Conference, Austin, TX, July 2008 (unknown total amount – everything was paid for before I saw the bills).

Educational Advancement Foundation grant to attend the 10th Annual Legacy of R.L. Moore Conference, Austin, TX, April 2007 (unknown total amount – everything was paid for before I saw the bills).

Travel grant to attend Fourth Meeting on CPT and Lorentz Symmetry, Bloomington, IN, August 2007 (\$1369.27).

Travel grant to attend Gordon Research Conference on Electromagnetism, Mount Holyoke College, MA, June 2006 (\$1576.10).

Travel grant to attend AAPT Winter National Meeting, Anchorage, AK, January 2006 (\$1277.61).

Travel grant to attend APS DAMOP national meeting, Lincoln, NE, May 2005 (\$1255.60).

Travel grant to attend Third Meeting on CPT and Lorentz Symmetry, Bloomington, IN, August 2004 (\$1025.00).

Travel grant to attend APS DAMOP national meeting, Tuscon, AZ, May 2004 (\$1018.00).

Faculty Development Grant to purchase Macromedia Director software, 2003 (\$500.00).

Travel grant to attend AAPT Summer National Meeting, Madison, WI, August 2003 (\$215.00).

Travel grant to attend AAPT Winter National Meeting, Austin, TX, January 2003 (\$1244.50).

Travel grant to attend APS DAMOP and DPF national meetings, Williamsburg, VA, May 2002 (\$1155.75).

Travel grant to attend Gordon Research Conference on Atomic Physics, Williamstown, MA, June 2001 (\$580).

6 Recognitions

Dave and Lu Garrett Award for Meritorious Teaching, Berry College, May 2008.

Outstanding Teaching Assistant, American Association of Physics Teachers, June 2000.

William Koss Memorial Award as Outstanding Graduate Student, Indiana University, Bloomington, Indiana, April 2000.

Joseph and Sophia Konopinski Award as Outstanding Associate Instructor, Indiana University, Bloomington, Indiana, February 2000.

McCormick Science Grant, Indiana University, Bloomington, Indiana, April 1999.

Teaching Excellence Recognition Award in Physics, Indiana University, Bloomington, Indiana, April 1998.

GAANN Fellowship, Indiana University, Bloomington, Indiana, August 1995–July 2000.

National Merit Scholar, August 1990–May 1994.

7 Service

7.1 Service to Department or Discipline

Journal Referee: American Journal of Physics, Classical and Quantum Gravity, Journal of Mathematical Physics, Journal of Physics A, Journal of Physics B, Journal of Physics G, New Journal of Physics, Physics Letters A, Physics Letters B, Physical Review D, Physical Review Letters.

Other referee: Addison-Wesley (textbook publishers), U.S. Department of State Science Centers (International Science and Technology Center).

7.2 Service(s) to(on) college committees, task forces, other special assignments or efforts:

Note: I've averaged about 2–3 committee memberships every year since I arrived at Berry. There are too many to list individually. Below, I've listed only membership on special committees and committee chairmanships.

Chair of Informational Technology Committee (Fall 2014–Spring 2015).

Chair of Ad-Hoc Committee on Student Evaluations (Fall 2013–Spring 2015).

Chair of Ad-Hoc Committee on Student Evaluations (Fall 2011–Spring 2012).

Member of the Course-Model Work Group (Spring 2011–Fall 2011).

Chair of Department of Physics, Astronomy, and Geology (Fall 2007 – Summer 2013).

Chair of Conson C. Wilson Lectureship Committee (Fall 2005 – Spring 2006).

8 Memberships

American Physical Society

American Association of Physics Teachers