

Curriculum Vita

Robert A. Cohen

Contact Information

Department of Physics, East Stroudsburg University, East Stroudsburg, PA 18301
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Present Position and Main Duties

Professor of physics, East Stroudsburg University, East Stroudsburg, PA
Chair of the physics department
Coordinator of science secondary education
Lab coordinator for algebra-based physics sequence
Advisor to secondary education students in physics, general science and earth/space science

Educational Background

1995 **Instructional I**, Pennsylvania Teaching Certificate (valid, temporarily inactive)
Subjects: Mathematics, General Science, Earth and Space Science, Physics
1993 **Ph.D.**, Physics and Atmospheric Science, Drexel University
1991 **M.Ed.**, Secondary Education, Temple University
1988 **M.S.**, Physics and Atmospheric Science, Drexel University
1985 **B.S.**, Meteorology, Pennsylvania State University

Professional Experience

2012- **Chair** of physics department, East Stroudsburg University, East Stroudsburg, PA
2005-2008 **Chair** of physics department, East Stroudsburg University, East Stroudsburg, PA
2005- **Professor** of physics, East Stroudsburg University, East Stroudsburg, PA
1999-2005 **Associate Professor** of physics, East Stroudsburg University, East Stroudsburg, PA
1996-1997 **Visiting Research Scientist** in Atmospheric Science, Drexel University, Philadelphia, PA
1994-1999 **Assistant Professor** of physics, East Stroudsburg University, East Stroudsburg, PA
1994 **Research Associate** in Atmospheric Science, Drexel University, Philadelphia, PA
1990-1991 **Adjunct Professor** of physics, Hahnemann University, Philadelphia, PA
1988-1989 **Lecturer** of meteorology, Drexel University, Philadelphia, PA
1987-1988 **Teaching Assistant** of physics, Drexel University, Philadelphia, PA
1986-1993 **Research Assistant** in Atmospheric Science, Drexel University, Philadelphia, PA
1985-1986 **Substitute Teacher** of math and science (grades 6-12), Cheltenham Township School District, Cheltenham, PA (Fall/Winter)

Scientific Publications

Cohen, R. A., and D. M. Schultz, 2005: Contraction Rate and its Relationship to Frontogenesis, the Lyapunov Exponent, Fluid Trapping and Airstream Boundaries, *Monthly Weather Review*, **133**, 1353-1369
Cohen, R. A. and C. W. Kreitzberg, 1997: Airstream Boundaries in Numerical Weather Simulations, *Monthly Weather Review*, 125, 168-183.
Cohen, R. A. and C. W. Kreitzberg, 1996: The Analysis of Airstream Boundaries, proceedings of the *15th Conference on Weather Analysis and Forecasting*, 19-23 August, Norfolk, Virginia, 491-494.
Cohen, R. A., 1993: *An Air Stream Analysis of the Occluded Cyclone*, Ph.D. Dissertation, Drexel University, 209 pp.
Cohen, R. A., and C. W. Kreitzberg, 1992: Atmospheric Tidal Variations Within the ERICA Drifting Buoy Data, *Monthly Weather Review*, **120**, 2383-2389.

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Textbooks and Manuals

Note: All of these materials are in current use by ESU courses except for the LAMPS90 User's Guide. Laboratory activities to accompany the "Fundamentals of Physics" textbook are available separately.

Cohen, R. A., 2022: *The Fundamentals of Physics (Volume I – Using Laws and Definitions)*, 17.2, 475 pp.

Cohen, R. A., 2022: *The Fundamentals of Physics (Volume II – Using Models)*, 17.1, 506 pp.

Cohen, R. A., 2021: *The Fundamentals of Physics (Supplemental Readings)*, 17.1, 84 pp.

Cohen, R. A., 2021: *An Introduction to the Physics of Weather Prediction*, 11.0, 337 pp.

Cohen, R. A., 2016: *Guide to Sound, Waves and Light*, 3.1, 173 pp.

Cohen, R. A., 1993: *LAMPS90 User's Guide*, 37 pp. [A PostScript version is available via <http://quantum.esu.edu/physics/lamps/>]

Science Education Publications

Cohen, R. A., 2014: *Meteorology*. In C. A. Wilson (Ed.), *Passing the State Science Proficiency Tests* (339 pages), University Press of America, Inc.

Cohen, R. A., 2014: *States of Matter*. In C. A. Wilson (Ed.), *Passing the State Science Proficiency Tests* (339 pages), University Press of America, Inc.

Veal, W. R., and R. A. Cohen, 2011: *Project Earth Science: Meteorology, revised second edition*, NSTA Press, 312 pp.

Cohen, R. A., 2009: *Formative Assessment with Student Remotes and Email*, chapter 14 in *College Science Teachers Guide to Assessment*, edited by T. J. Lord, D. P. French and L. W. Crow, NSTA Press, 2009, 160 pp.

Johnson, P.A., P. J. Moser, R. A. Cohen and J. E. Mackin, 2002: Improving the Quality and Quantity of K-12 Teachers of Mathematics and Science: The Collaborative for Excellence in Teacher Preparation in Pennsylvania, *APS Forum on Education Newsletter*, Spring edition

Cohen, R. A., 1999: Using Text Reviews and Electronic Communication to Improve Student Performance, proceedings of the *Centennial Meeting of the American Association of Physics Teachers*, 23 March, Atlanta, Georgia.

Recent Grants Received (since 2005)

\$600: ESU Faculty Development Research Committee (Grant # 2017-124) to attend the 2017 "Discover the NGSS Train-the-Trainer" workshop, October 6-7, 2017, Baltimore, Maryland.

\$2500: Using Cutting Edge Technology in STEM at ESU (PPL Foundation – Entrepreneurship Across the Colleges), Co-PI with Darlene Farris-Labar, Shixiong Hu and Richard Otto

\$254: ESU Faculty Development Research Committee (Grant # 2013-041) to attend the 2012 Physics Education Research Conference, August 1, 2012, Philadelphia, Pennsylvania.

\$746: ESU Faculty Development Research Committee (Grant # 2013-021A) to attend and present at the 2012 Summer Conference of the American Association of Physics Teachers, July 29 – July 31, 2012, Philadelphia, Pennsylvania.

\$1000: ESU Faculty Development Research Committee (Grant # 2011-067) to present at the 15th Cyclone Workshop, March 28 – April 1, 2011, Monterey, California.

\$217.13: ESU Faculty Development Research Committee (Grant # 2010-071) to present at the annual conference/meeting of the Association of Science Teacher Educators/Northeast Region, October 22-24, 2009, Bushkill Falls, Pennsylvania.

\$1000: ESU Faculty Development Research Committee (Grant # 2009-005) to present at the 14th Cyclone Workshop, September 21-26, 2008, Sainte-Adele, Quebec, Canada.

\$2,039.39: ESU Faculty Development Research Committee (Grant # 2008-059), Madara Fund, Noonan Fund and CETP-PA grant to accompany students and present at the 2008 NSTA Science Education Conference, March 27-30, 2008, Boston, Massachusetts.

\$570.49: ESU Noonan Fund to accompany a student and co-present at the 33rd Northeast Storm Conference, March 14-16, 2008, Springfield, Massachusetts.

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- \$412: ESU Faculty Development Research Committee (Grant # 2008-149) to attend 2008 Winter Meeting of the American Association of Physics Teachers, January 19-21, 2008, Baltimore, Maryland.
- \$800: ESU Faculty Development Research Committee (Grant # 2007-027) to present at the *13th Cyclone Workshop*, October 26, 2006, Monterey, California.
- \$29,343: CETP-PA grant for 2004-2005 (part of the \$5 million NSF CETP grant #9986753)

Scientific Presentations

- Cohen, R. A., 2013: The Evolution of Fronts and Cyclones over the U.S. 2012-2013, *16th Cyclone Workshop*, 23 – 27 September, Sainte-Adele, Quebec, Canada
- Cohen, R. A., 2011: Cyclones, Butterflies and Your Morning Cup of Coffee, *15th Cyclone Workshop*, 28 March – 1 April, Monterey, CA
- Cohen, R. A., 2008: The Myth of the Leading Edge, *14th Cyclone Workshop*, 22 September, Sainte-Adele, Quebec, Canada
- Domke, R. A., and R. A. Cohen, 2008: The Impact of Moisture on the Structure of an Intense Oceanic Cyclone, *33rd Northeast Storm Conference*, 15 March, Springfield, MA
- Cohen, R. A., and D. M. Schultz, 2006: The Relationship Between Frontal Zones and Airstream Boundaries, *13th Cyclone Workshop*, 25 October, Monterey, CA
- D. M. Schultz and R. A. Cohen, 2005: Applications of the contraction-rate diagnostics for Mesoscale processes, *11th Conference on Mesoscale Processes*, 24-29 October, Albuquerque, NM
- Cohen, R. A., and D. M. Schultz, 2004: The Relationship between Fronts, Frontal Zones and Airstream Boundaries, *Fred Sanders Symposium*, 12 January, Seattle, Washington.
- Cohen, R. A., and D. M. Schultz, 2003: Carl Kreitzberg: Scientist, Mentor, Colleague and Charter Member of the Cyclone Workshop, *12th Cyclone Workshop*, 21-26 September, Val Morin, Quebec, Canada.
- Cohen, R. A., and D. M. Schultz, 2003: Airstream Boundaries vs. Fronts: A Comparison, *28th Annual Northeastern Storm Conference*, 7-9 March, Sarasota Springs, New York.
- Cohen, R. A., and D. M. Schultz, 2000: The Relationship Between Fronts and Airstream Boundaries, *11th Cyclone Workshop*, 28 August-1 September, Monterey, California.
- Cohen, R. A., and D. M. Schultz, 1997: Air Masses and Airstreams, *Tenth Cyclone Workshop*, 21-26 September, Val-Morin, Quebec, Canada.
- Cohen, R. A. and C. W. Kreitzberg, 1996: The Analysis of Airstream Boundaries, *15th Conference on Weather Analysis and Forecasting*, 19-23 August, Norfolk, Virginia.
- Cohen, R. A., C. W. Kreitzberg and J. Trout, 1995: The Structural Evolution of the Air Stream Boundaries in ERICA, *Ninth Extratropical Cyclone Workshop*, 3 December to 7 December, Monterey, California.
- Cohen, R. A., 1995: The Structure of Nor'easters: Fronts and Air Stream Boundaries, *Pennsylvania Geographical Society Annual Meeting*, 4 November, West Chester University, Pennsylvania.
- Cohen, R. A., 1995: On the Analysis of Air Stream Boundaries, *20th Annual Northeastern Storm Conference*, Sarasota Springs, New York.
- Cohen, R. A., C. W. Kreitzberg and J. Guo, 1994: Air Stream Boundaries and Fronts in STORMFEST IOPs 6 and 17, *6th Conference on Mesoscale Processes*, 18 July to 22 July, Portland, Oregon.
- Kreitzberg, C. W., and R. A. Cohen, 1994: Air Stream Analysis: An Objective Way to Diagnose the Evolution of Important Structures in Occluded Cyclones, *International Symposium on the Life Cycles of Extratropical Cyclones*, 27 June - 1 July, Bergen, Norway.
- Cohen, R. A. and C. W. Kreitzberg, 1994: Air Stream Boundaries and Frontal Evolution in Occluding Cyclones, *International Symposium on the Life Cycles of Extratropical Cyclones*, 27 June - 1 July, Bergen, Norway.
- Cohen, R. A., and C. W. Kreitzberg, 1994: An Objective Technique and Conceptual Model for the Air Stream Analysis of Occluded Cyclones, *19th Annual Northeastern Storm Conference*, 11 March to 13 March, Sarasota Springs, New York.

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Cohen, R. A., and C. W. Kreitzberg, 1992: The Development of Occluded Fronts in Numerical Simulations of ERICA Storms, *American Geophysical Union, 1992 Spring Meeting*, 12 May to 16 May, Montreal, Canada.

Science Education Presentations

- Cohen, R. A., 2021: An Introduction to the Next Generation Science Standards, *Pennsylvania Science Teachers Association*, 17 August, Online
- Cohen, R. A., 2021: Nor'easters, Bomb Cyclones, the Polar Vortex and Global Warming, *Stroudsburg Rotary Club*, 12 August, Delaware Water Gap, PA
- Cohen, R. A., 2021: Bomb Cyclones, Global Warming and the Polar Vortex, *East Stroudsburg University Provost Colloquium*, 3 February, East Stroudsburg, PA
- Cohen, R. A., 2019: Explaining energy transformations in chemical reactions, *Pennsylvania Science Teachers Association*, 7 October, Lancaster, PA
- Cohen, R. A., 2019: Improving critical reading of science textbooks with Perusal: A collaborative electronic text interface (as part of College Committee session: High Impact/Low Effort Strategies for Student Success in AP and College Courses), *National Science Teachers Association*, 12 April, St. Louis, MO
- Cohen, R. A., and J. Ross, 2019: Math Competency and Success in an Algebra-Based Physics Course (as part of SCST Poster Session), *National Science Teachers Association*, 12 April, St. Louis, MO
- Cohen, R. A., 2019: Basic Concepts in Mechanics That Even Physics Teachers Struggle With (ASTE-Sponsored Session), *National Science Teachers Association*, 12 April, St. Louis, MO
- Cohen, R. A., 2018: Share-A-Thon: Set Your Sights Higher Session (Simulating the process of bonding and the associated release of energy), *National Science Teachers Association*, 17 March, Atlanta, GA
- Cohen, R. A. and J. K. Elwood, 2015: The Challenge of Developing Experimental Skills in an Introductory Lab with Transient Temporary Instructors, *American Association of Physics Teachers, 2015 Summer Meeting*, 27 July, College Park, MD
- Cohen, R. A. and M. A. Moore, 2012: A New Order on a Classic Sequence, *American Association of Physics Teachers, 2012 Summer Meeting*, 1 August, Philadelphia, PA
- Cohen, R. A., M. A. Moore and J. Spirko, 2012: Think Your Students' Math Skills Are Bad? Well, They're Worse!, *American Association of Physics Teachers, 2012 Summer Meeting*, 31 July, Philadelphia, PA
- Cohen, R. A., M. A. Moore and J. Spirko, 2011: What Math is Required for Physics?, *60th Annual Conference of the Pennsylvania Council of Teachers of Mathematics*, 10 November, State College, PA
- Cohen, R. A., 2009: Can You Have a Good Science Lesson Without Inquiry?, *Association for Science Teacher Education Northeast Region Meeting*, 24 October, Bushkill, PA
- Cohen, R. A., 2009: Preservice and Inservice Teachers Working Together as Teacher Researchers, *Association for Science Teacher Education International Meeting*, 10 January, Hartford, CT
- Cohen, R. A., L. Bernhardt, S. Pascale, A. L. Rowlands and D. Wallace, 2008: Preservice and Inservice Teachers Working Together as Teacher Researchers, *2008 National Conference on Science Education*, 28 March, Boston, MA
- Cohen, R. A., 2006: Revising the Algebra-based Physics Sequence, *2006 AAPT Summer Meeting (American Association of Physics Teachers)*, July, Syracuse, NY [poster]
- Cohen, R. A., 2006: A Simple Evaluation of Technology-Enhanced Formative Assessment Techniques, *2006 AAPT Summer Meeting (American Association of Physics Teachers)*, July, Syracuse, NY
- Cohen, R. A., 2006: Using Email, Student Remotes and an innovative Textbook in Algebra-based Physics, *2006 International Conference on Science Education (NSTA)*, April, Anaheim, CA
- Cohen, R. A., 2005: Email + Student Remotes + Innovative Textbook = Formative Assessment that Works!, *2005 Pennsylvania Science Teachers Association Conference*, December, Hershey, PA
- Cohen, R. A., and C. Cratsley, 2005: NCATE Accreditation: Views from the Field, *Association for Science Teacher Education Northeast Region Meeting*, 27-28 October, Amherst, MA

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- Cohen, R. A., 2005: Using Technology to Support Formative Assessment, *2005 RECAP Conference*, May, West Chester, PA
- Cohen, R. A., 2005: Facilitating Formative Assessment: Innovative and Effective Techniques Used in Physics, *2005 Provost's Colloquium*, January, East Stroudsburg University, East Stroudsburg, PA
- Cohen, R. A., 2004: A Comparison of Several Algebra-based Physics I Sections: Preliminary Results, *2004 CETP-PA Summer Conference*, August, Clarion, Pennsylvania
- Cohen, R. A., 2004: Action Research in the Secondary Science Classroom: An Update, *2004 CETP-PA Summer Conference*, August, Clarion, Pennsylvania
- Cohen, R. A., 2003: A Textbook for Algebra-based Physics that Supports Constructivism, *2003 CETP-PA Summer Conference*, August, Edinboro, Pennsylvania
- Cohen, R. A., and J. Hearon, 2003: Teacher Partners: A University-School Collaborative, *2003 CETP-PA Summer Conference*, August, Edinboro, Pennsylvania
- Cohen, R. A., 2003: Explaining the Rotation of Hurricanes Without Saying "Coriolis": It Can Be Done!, *2003 National Meeting of the National Science Teachers Association*, March, Philadelphia, Pennsylvania
- Cohen, R. A., and R. Cowell, 2003: A Preservice/Intermediate School Collaborative, *2003 National Meeting of the National Science Teachers Association*, March, Philadelphia, Pennsylvania
- Cohen, R. A., 2003: CETP-PA: Forging collaborations among faculty from different colleges, universities, community colleges and K-12 schools, *2003 International Conference of the Association for the Education of Teachers in Science*, 1 February, St. Louis, Missouri
- Cohen, R. A., 2003: Outcomes for a secondary science methods course: Is there any consensus?, *2003 International Conference of the Association for the Education of Teachers in Science*, 31 January, St. Louis, Missouri
- Cohen, R. A., 2002: CETP-PA: Forging collaborations among faculty from different colleges, universities, community colleges and K-12 schools, *2002 Meeting of the Association for the Education of Teachers in Science - Northeast Region*, October, Syracuse, New York
- Cohen, R. A., 2002: A Textbook for Algebra-based Physics that Supports Constructivism, *2002 CETP-PA Summer Conference*, August, Millersville, Pennsylvania
- Cohen, R. A., and P. Batch, 2002: Teacher Aids: A Support System for New Teacher Retention, Innovation in the Classroom & Pre-service Education, *2002 CETP-PA Summer Conference*, August, Millersville, Pennsylvania
- Cohen, R. A., 2002: A Secondary Science Methods/Intermediate School Collaborative, *2002 CETP-PA Summer Conference*, August, Millersville, Pennsylvania
- Cohen, R. A., 2002: My experience in using inquiry techniques to teach algebra-based general physics, *CETP-PA IUP Local Team Workshop*, 1 March, Indiana, Pennsylvania (invited)
- Cohen, R. A., 2002: CETP-PA Local Activities, *2002 Annual Meeting of the American Association of Physics Teachers*, 21 January, Philadelphia, Pennsylvania
- Cohen, R. A., 2001: Scientific Inquiry and the proposed PA standards, *2001 Annual Meeting of the Pennsylvania Science Teachers Association*, December, Hershey, Pennsylvania
- Cohen, R. A., 2001: Scientific Inquiry and the proposed PA standards, *2001 CETP-PA Summer Conference*, August, Bloomsburg, Pennsylvania
- Cohen, R. A., 2001: Scientific Inquiry and the proposed K-12 standards in physics, *2001 Regional Meeting of the Central Pennsylvania Section of the American Association of Physics Teachers*, 21 April, East Stroudsburg, Pennsylvania
- Cohen, R. A., 2001: The Coriolis Effect: Explained?, *2001 Regional Meeting of the Central Pennsylvania Section of the American Association of Physics Teachers*, 20 April, East Stroudsburg, Pennsylvania
- Cohen, R. A., 2000: Comparison of Four Different Lab Types, *2000 Meeting of the Association for the Education of Teachers in Science - Northeast Region*, 27 October, Syracuse, New York.
- Cohen, R. A., G. W. Foster, M. Latz, D. Duggan-Hass, C.-T. Liu, A. Adams, R. Schwartz, 2000: Science Education and Science Faculty Collaboration: Developing a Common Philosophy of Science

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- Teaching, *2000 International Meeting of the Association for the Education of Teachers in Science*, 7 January, Akron, Ohio.
- Simmons, P., J. Penick, A. Kemp, R. A. Cohen, V. Olness, 2000: Outside the Hotel: Continuing the Challenging Dialogue and Critical Discourse, *2000 International Meeting of the Association for the Education of Teachers in Science*, 6 January, Akron, Ohio.
- Cohen, R. A., 1999: Using Text Reviews and Electronic Communication to Improve Student Performance. *Centennial Meeting of the American Association of Physics Teachers*, 23 March, Atlanta, Georgia.
- Cohen, R. A., 1999: A 3-credit "stand alone" Secondary Science Methods Course, *1999 International Meeting of the Association for the Education of Teachers in Science*, 17 January, Austin, Texas.
- Cohen, R. A., 1995: Science Writing for Non-Scientists, *American Association of Physics Teachers Northeast Regional Conference*, 21 October, Princeton University, New Jersey.

Professional Memberships

National Science Teaching Association

(**Strand Leader**, 2020 Pittsburgh Area Conference, cancelled due to covid)

(**Member**, committee on post-secondary science teaching, 2018-2021)

(**Member**, committee on pre-service teacher education, 2001-2004)

Pennsylvania Science Teachers Association

(**Northeastern Representative**, Board of Directors, 2020)

(**Vice President**, 2021)

(**President-Elect**, 2022)

Society of College Science Teachers

American Association of Physics Teachers

Association for Science Teacher Education

(**Member**, Ad hoc committee on Scientist/Educator Collaborations, 1997-2000)

(**Chair**, Ad hoc committee on Scientist/Educator Collaborations, 1999-2000)

(**Member**, Forum on Scientist/Educator Collaborations, 2002-present)

(**Member**, Program Committee, 2003)

(**Member**, Ad hoc Committee on Professional Liaison Organizations, 2001-2002)

American Meteorological Society

Sigma Xi, The Scientific Research Society

Advising

2017-present **Advisor**, STEM Living Learning Community, Laurel Hall

2016-present **Advisor**, Kappa Delta Rho fraternity, East Stroudsburg University

2011-present **Advisor**, Jewish Student Organization, East Stroudsburg University

2003-present **Advisor**, East Stroudsburg University student chapter of the National Science Teachers Association (see <http://quantum.esu.edu/physics/nsta.html>)

Professional Service - ESU

2021-present **Chair**, ESU Academic Council of Chairs

2013-present **Senator**, representing physics department, ESU University Senate

2020-present **Parliamentarian**, ESU University Senate

2020-2021 **At-large executive committee member**, ESU University Senate

2014-2020 **President**, ESU University Senate

2017-2020 **At-large member**, Executive Committee, ESU Academic Council of Chairs

2015-2016 **Chair**, ESU Academic Council of Chairs

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- 2000-2014 **SPA coordinator**, ESU science education programs, NCATE accreditation process
1996-2005 **Member**, ESU General Education committee
1994-2017 **Web Steward**, East Stroudsburg University Physics Department

Professional Service – Other

- 2004-2014 **Email list coordinator**, Cyclone Workshop participants (international group of scientists working on cyclone research)

Thesis and Dissertation Advisement

Total: 4 committee memberships (I have not directly advised any graduate students)

B. Robbins (Ed.D. Thesis, Education Administration, East Stroudsburg University, East Stroudsburg, PA, 2015)

M. Polashenski (M.S. Thesis, Physics, East Stroudsburg University, East Stroudsburg, PA, 1998)

G.-B. Lu (Ph.D. Thesis, Atmospheric Science, Drexel University, Philadelphia, PA, 1997)

J. Trout (Ph.D. Thesis, Atmospheric Science, Drexel University, Philadelphia, PA, 1997)