

Paul A. Nakroshis

CONTACT INFORMATION [Department of Physics](#)
[University of Southern Maine](#) *Voice:* (207) 780.4158
 252 Science *Fax:* (207) 228-8288
 96 Falmouth Street *E-mail:* pauln@maine.edu
 Portland, ME 04104-9300 www.usm.maine.edu/~pauln/

EDUCATION [University of Illinois at Urbana-Champaign](#), B.S., Physics, June 1986

[University of Massachusetts at Amherst](#), Ph.D., Physics, Feb. 1994
Experimental Gravitational Physics, Advisor: Robert V. Krotkov

RESEARCH EXPERIENCE [University of Southern Maine](#), Portland, ME

Associate Professor of Physics **2003 to present**

- Granular materials, Computational Simulation of granular systems

Assistant Professor of Physics **1997 to 2003**

- Stick-slip in granular arrays, video microscopy of Brownian Motion

[Clark University](#), Worcester, MA

NSF Postdoctoral Fellow and Instructor **1993 to 1995**

- Complete responsibility for design and construction of a new laboratory-based course on non-linear and chaotic systems. Use of video microscopy, and computer interfacing, Fortran and C programming languages.

[University of Massachusetts](#), Amherst, MA

Graduate Student **1986 to 1993**

- Experimental gravitational physics. Design, construction, and operation of a sensitive torsion pendulum to determine if the gravitational force is composition dependent. Experience in high vacuum work, machining, temperature control, diode laser and fiber optics, electronic design and construction.
- Theoretical Nuclear Physics: T and S matrix scattering (1987)
- Brookhaven National Laboratory: Graduate research assistant (1986)

[University of Illinois](#), Champaign-Urbana, IL **1982 to 1986**

- Fermi National Accelerator Laboratory: Summer research assistant (1985)

TEACHING EXPERIENCE [University of Southern Maine](#), Portland, ME

Associate Professor of Physics **2003 to present**

- Introductory Algebra-Based Physics I and II (Physics 111k and 112)
- Introductory Physics Laboratory (Physics 114 and 116)
- Introductory Calculus-Based Physics I and II using classroom response system (Physics 121k and 123)
- Non-Classical Physics I and II (Physics 211 and 213)
- Intermediate Physics Laboratory (Physics 240)
- Computational Physics (Physics 261)
- Optics (Physics 375)

Assistant Professor of Physics

1997 to 2003

- Introductory Algebra-Based Physics I and II (Physics 111k and 112)
- Introductory Physics Laboratory (Physics 114 and 116)
- Introductory Calculus-Based Physics I and II (Physics 121k and 123)
- Modern Physics Laboratory (Physics 212)
- Intermediate Physics Laboratory (Physics 240)
- Computational Physics (Physics 261 and 299)

CUREA, Mt. Wilson Observatory, CA

Consortium for Undergraduate REsearch in Astronomy

1997 to 1998

- One of four instructors at the Mt. Wilson Observatory summer program for Undergraduates. Topics included visual and photographic use of research telescopes, digital photometry of variable stars, and observation of solar spectra.

Souhegan High School, Amherst, NH

Physics Teacher

1995 to 1997

- AP Physics
- General Physics
- General Science

Clark University, Worcester, MA

NSF Postdoctoral Fellow and Instructor

1993 to 1995

- Discovering Physics: Complexity in Nature
- Science workshops for k-8 teachers

AWARDS

2000 Faculty Senate Honors: Excellence in Teaching (Univ. of Southern Maine)
 1992 Distinguished Teaching Assistant Award (Univ. of Massachusetts)
 1986 Graduation with Distinction (University of Illinois)

PUBLICATIONS

P. Nakroshis, *The Headlight Effect*, from The Wolfram Demonstrations Project, (25) October 2007 (<http://demonstrations.wolfram.com/TheHeadlightEffect>).

P. Nakroshis, M. Amoroso, J. Legere, and C. Smith, *Measuring Boltzmann's constant using video microscopy of Brownian motion.*, Am. J. Phys. **71** (6), June 2003.

P. Nakroshis and C. Smith, *Force Fluctuations in a Driven 2D Granular Array*, Bulletin of the American Physical Society, March 2001.

P. Nakroshis and C. Smith, *Rotational dynamics of a driven two dimensional granular array*, Bulletin of the American Physical Society, March 2001.

P. Nakroshis, S. L. Blatt, C. Landee, and H. Gould, *Order, Disorder, and Chaos: a New Course for Non-Science Majors*, Bull. Am. Phys. Soc. 40, 967 [1995].)

S. L. Blatt, H. Gould, M. Gould, P. Nakroshis, C. Barton, and C. Landee. *The discovering physics project: New approaches to science teaching*, Bull. Am. Phys. Soc. 39, 1171 [1994].

P. Nakroshis, C. Barton, and S. Leslie Blatt, *Science Workshops for Teachers: Building Background and Confidence*, Bull. Am. Phys. Soc. 39, 1171 [1994].

P. Nakroshis, *A search for a composition dependent gravitational force*, Ph.D. Dissertation, Smithsonian/NASA Astrophysics Data System, 1994.

BOOKS IN
PREPARATION
GRANTS

Nakroshis, P. A. *Introductory Computational Physics with Python.*

Maine Space Grant Consortium: awarded (with Jerry LaSala, PI) \$3500 to develop and integrate astrophysics experiments into the introductory and advanced undergraduate laboratories, 2006.

Dean of the College of Arts and Sciences awarded \$ 4000 for research equipment. March 2001.

USM Faculty Senate Grant: Stick-Slip dynamics of a 2D array of particles with Simultaneous Imaging, funded through Brian Hodgkin and Julie Ellis, awarded \$3000, February 2001.

USM Faculty Senate Grant: Stick-slip dynamics of a two dimensional array of particles, awarded \$3000 in February 2000.

Maine Space Grant Consortium awarded \$2500 to help fund my student, Christopher Smith, in his imaging studies of granular particles. Fall 2000

CONFERENCES
AND TALKS

P. Nakroshis *STEM as a Branch of Democracy Institute*, Hosted by Campus Compact, Portland, ME, May 22-24, 2006.

P. Nakroshis, C. Smith, *Force fluctuations and Angular Rotations in a Driven Granular Array*, Invited Colloquium speaker at the Department of Physics and Astronomy, University of Maine at Orono, Feb. 2002

P. Nakroshis, C. Smith, and M. Amoroso, *Dynamics of a two dimensional granular medium*, University of Southern Maine Poster Session, April 2002.

C. Smith and P. Nakroshis, *Rotational dynamics of a Driven 2D Granular Array*, March Meeting of the American Physical Society, Seattle, WA, March 2001.

P. Nakroshis, C. Smith, and M. Amoroso, *Force Fluctuations in a Driven 2D Granular Array*, March Meeting of the American Physical Society, Seattle, WA, March 2001.

P. Nakroshis, *Using a Structured Feedback Protocol to Improve Student Learning and Raise Standards*, New England Section Spring Meeting of the APS, April 2000.

P. Nakroshis, C. Smith and M. Amaroso, *Stick-Slip dynamics of one and two dimensional arrays of cylinders*, New England Section Spring Meeting of the APS, April 2000.

P. Nakroshis, *Incorporating writing into the science curriculum*, First Annual USM summer seminar on the theory and practice of writing, Stone House Conference Center, USM, June 1999.

P. Nakroshis, *Measuring Boltzmanns constant via Brownian Motion*, New England Section Spring Meeting of the APS/AAPT, April 1998.

P. Nakroshis, C. Barton, S. L. Blatt, *Order, Disorder, and Chaos: A new course for non-science majors*, Joint Meeting of the APS/AAPT, April, 1995.

P. Nakroshis, *Student Centered education in the college classroom*, Clark University, February, 1995.

S. L. Blatt, H. Gould, M. Gould, P. Nakroshis, C. Barton, and C. Landee. *The discovering physics project: New approaches to science teaching*, Fifteenth Annual Ethnography in Education Research Forum, U. of Penn, February 1994.

P. Nakroshis, C. Barton, and S. Leslie Blatt, *Science Workshops for Teachers: Building Background and Confidence*, Fifteenth Annual Ethnography in Education Research Forum, U. of Penn, February 1994.

UNIVERSITY AND
PROFESSIONAL
SERVICE

Referee for American Journal of Physics. Reviewed an article at the request of the editor. Feb. 2007

Student advising in Physics Department (7 students at this time)

Member, Project 100 Faculty 1998-present

Member, MMSTEC (Maine Mathematics-Science Teachers Excellence Collaborative), and NSF funded project to improve the quality of math and science teachers preparation. Richard Stebbins, PI.

NSF Science Bowl judge, Spring 2001.

Workshop Presenter (with Hank Tracy and Ann Dean) at USM Provosts Writing Seminar (Giving and Receiving Structured Feedback), 1999, 2000 and 2001.

Member, Provosts Writing Committee, 1999-2001 (Nancy Gish, Chair).

Center for Teaching Workshop: Authentic Assessment as a way to gauge student learning (November 16, 1998)

Co-Chairperson, Faculty Awards Program (1999-2000)

Member, Teacher Education Science Committee, 1997-98. Worked on setting science outcome standards for the teacher education program at USM.

PUBLIC SERVICE

Supervise student teaching of introductory physics for The New School in Kennebunk (private high school started by Maryln Wentworth). One of our physics majors was interviewed and hired to teach.

Consultant for Poland Regional High School: helped create a new interdisciplinary math/physics course, summer 2000.

Outside Evaluator for 2 Marlboro College Physics students senior projects. (May 1999)

Grant reviewer for Maine Space Grant Consortium (fall 1999) Consultation with David Burke (Science/Math Chair) for Poland Regional High School, spring 1999.

Coordinator for Souhegan High School / USM College Physics Credit Agreement. Agreement was created through my initiation with USM Administration. Fall 1998-present.

OTHER
EXPERIENCE

Classical Piano studies: Clark Univerity, 1995-1997

Photographer and Sole Proprietor: [Paul Andrew Photography](#)

Photography Shows for Appalachian Mountain Club, UMass Environmental Institute, various public libraries and businesses in Maine.

PROFESSIONAL
SOCIETY
MEMBERSHIPS

American Physical Society
American Association of Physics Teachers
International Dark Sky Association
American Solar Energy Society

TECHNICAL
SKILLS

[IGOR PRO](#) Experience with 2d, 3d visualization, time series analysis, programming custom functions and interfaces in Igor Pro.

[MATHEMATICA](#) experience with symbolic algebra, 2d, 3d visualization.

Instrumentation and Control: [LabVIEW](#) and other [National Instruments](#) control and data acquisition hardware and software

Programming languages: C, C++, Fortran, Python.

Applications: [L^AT_EX](#), Open Office, Pages, iWork, Photoshop, Aperture, Lightroom, Textmate, and other common productivity packages for OS X and Linux platforms

Operating Systems: Apple OS X, Linux, Microsoft Windows

Digital Photography: Extensive experience in photography, post-processing of images, printing, matting, and framing.

Web Site design: see my homepages at the [University of Southern Maine](#), and at [Paul Andrew Photography](#).