

Suzanne Amador Kane

Professional	2016 - present	Professor, Physics & Astronomy Department, Haverford College
Employment	1999 - 2015	Associate Professor, Physics & Astronomy Department, Haverford College
	1991-98	Assistant Professor, Physics & Astronomy Department, Haverford College
	1988-1990	Postdoctoral research associate, Department of Chemistry, University of Pennsylvania; Research Supervisor: J. K. Blasie
	1984	Product engineer & technical writer, Piezoelectric Products, Cambridge MA
		I worked at an electronics start-up company between undergraduate and graduate school.
Education	1989	Ph.D., Applied Physics, Harvard University. Dissertation: "Light scattering and x-ray scattering studies of thin, freely-suspended liquid crystal films", advisor Prof. Peter S. Pershan.
	1984	M.S., Applied Physics, Harvard University.
	1982	B.S., Physics, Massachusetts Institute of Technology.
Honors & Awards		John & Barbara Bush Professor of Natural Sciences (endowed chair) Fellow, American Physical Society Temple University Nina W. Hillman Lecture Andrew Mellon New Directions Fellowship Haverford College Innovation in Teaching Award, Kalamazoo College, Jennifer Mills Lecturer Sigma Xi

Books

S. Amador Kane & Boris Gelman, *Introduction to Physics in Modern Medicine*, 3rd edition, textbook with problems, Taylor and Francis Publishers, Inc. London, UK, (2020).

Peer-reviewed publications (undergraduate student coauthors are underlined)

1. **S. Amador Kane**, Theodore Bien, Luis Contreras-Orendain, Michael F. Ochs, S. Tonia Hsieh, "Many ways to land upright: novel righting strategies allow spotted lanternfly nymphs to land on diverse substrates," *Journal of the Royal Society Interface* 18(181) 20210367 (2021).
2. **S. Amador Kane**, Yuchao Wang, Rui Fang, Yabin Lu, Roslyn Dakin, "How conspicuous are peacock and other colorful feathers in the eyes of mammalian predators?" *PLOS One* 14(4) e0210924 (2019).
3. Megan Holt, Daniel Gillen, Chelsea Cook, Christa Hixson Miller, Sacha Nandlall, Kevin Setter, Cary Supalo, Paul Thorman, and **S. Amador Kane**, "Making physics courses accessible to blind students: strategies for course administration, class meetings and course materials," 57, 94-98 *The Physics Teacher* (2019).
4. **S. Amador Kane**, Daniel van Beveren, Roslyn Dakin, "Biomechanics of the peafowl's crest: a potential mechanosensory role for feathers during social displays" *PLOS One* 13(11) e0207247 (2018).
5. Michael F. Ochs, Marjon Zamani, Gustavo Maia Rodrigues Gomes, Raimundo Cardoso de Oliveira Neto, **S. Amador Kane**, "Sneak peak: hawks use stochastic head motions to perform visual searches," *The Auk* 134(1), pp. 104-115 (2017).
6. Roslyn Dakin, Owen McCrossan, James F. Hare, Robert Montgomerie, **S. Amador Kane**, "Biomechanics of the peacock's display: how feather structure and resonance influence multimodal signaling," *PLOS One* 11(4), e0152759 (2016). (Top 1% most downloaded)

7. **S. Amador Kane**, A. Harvey Fulton, Lee Rosenthal, "When hawks attack: animal-borne video studies of goshawk pursuit and prey evasion strategies", *The Journal of Experimental Biology*, **218**:212-222 (2015).
8. **S. Amador Kane** and Marjon Zamani, "Falcons pursue prey using visual cues: new perspectives from animal-borne cameras," *The Journal of Experimental Biology* **217**, pp. 225-234 (2014). (Editors Choice article)
9. Anna Klales, James Duncan, Elizabeth Janus Nett and **S. Amador Kane**, "Biophysical model of prokaryotic diversity in geothermal hot springs", *Phys. Rev. E* **85**(2) 021911 (2012).
10. Daniel J. Rigotti, Bashkim Kokona, Theresa Horne, Eric K. Acton, Carl D. Lederman, Karl A. Johnson, Robert S. Manning, **S. Amador Kane**, Walter F. Smith and Robert Fairman, "Quantitative atomic force microscopy image analysis of unusual filaments formed by the *Acanthamoeba castellanii* myosin II rod domain" *Analytical Biochemistry*, **346**(2), 2005, pp. 189-200.
11. **S. Amador Kane**, "Interdisciplinary faculty development seminars: a model for learning emerging technologies while developing interdisciplinary partnerships," *The Journal of Science Education and Technology*, **12**(4), 421-430 (2003).
12. **S. Amador Kane**, "Quantitative chirality measures applied to domain formation in Langmuir monolayers", *Langmuir* **18**, 9853 (2002).
13. **S. Amador Kane**, "An undergraduate biophysics program: curricular examples and lessons from a liberal arts context" *Am. J. Phys.* **70**, 581 (2002).
14. **S. Amador Kane** and S. D. Floyd, "Interaction of local anesthetics with phospholipids in Langmuir monolayers" *Phys. Rev. E*, **62**, 8400-8408 (2000).
15. **S. Amador Kane**, M.A.Compton, N.Wilder, "Interactions determining the growth of chiral domains in phospholipid monolayers: experimental results and comparison with theory" *Langmuir*, **16**(22), 8447-8455 (2000).
16. **S.M. Amador**, "Teaching medical physics to general audiences" *Biophys. J*, **66**, 2217 (1994).
17. **S.M. Amador**, J. M. Pachence, R. Fischetti, J. P. McCauley, Jr., A.B. Smith III, J.K. Blasie, "Use of self-assembled monolayers to covalently tether protein monolayers to the surface of solid substrates" *Langmuir*, **9**, 812 (1993).
18. S. Xu, M. A. Murphy, **S. M. Amador**, J. K. Blasie, "Proof of asymmetry in the Cd-arachidate bilayers of ultrathin Langmuir-Blodgett multilayer films via x-ray interferometry" *J. Phys. I (France)* **1**, 1131 (1991).
19. J.M.Pachence, **S.M. Amador**, G. Maniara, J. Vanderkooi, P.L. Dutton, J.K. Blasie, "Orientation and lateral mobility of cytochrome *c* on the surface of ultrathin lipid multilayer films", *Biophys. J.* **58**, 379 (1990).
20. **S.M. Amador**, J. M. Pachence, R. Fischetti, J. P. McCauley, Jr., A.B. Smith III, J.K.Blasie, "X-ray diffraction studies of protein monolayers bound to self-assembled monolayers" *Materials Research Society Symposium Proceedings, Vol. 177: Macromolecular Liquids*, eds. Cyrus R. Safinya, Samuel A. Safran, Philip A. Pincus, Materials Research Society, Pittsburgh, (1990). (parts of this work also appear in Amador et al., 1993.)
21. **S.M. Amador**, P.S. Pershan, "Light-scattering and ellipsometry studies of the two-dimensional smectic-C to smectic-A transition in thin liquid crystal films", *Phys.Rev. A* **41**, 4326 (1990).
22. **S.M. Amador**, P.S. Pershan, H. Stragier, B.D.Swanson, D.J. Tweet, L.B. Sorensen, E.B. Sirota, G.E. Ice and A. Habenschuss "Synchrotron studies of the first-order melting transitions of hexatic monolayers and multilayers in freely suspended liquid crystal films", *Phys. Rev. A* **39**, 2703 (1989).
23. E.B. Sirota, P.S. Pershan, **S.M. Amador**, L.B. Sorensen "Synchrotron x-ray observation of surface smectic-I hexatic layers on smectic-C liquid crystal films", *Phys. Rev. A* **35**, 2283 (1987).

Other publications

1. Catherine H. Crouch, Robert Hilborn, **Suzanne Amador Kane**, Timothy McKay, and Mark Reeves, "Physics for future physicians and life scientists: a moment of opportunity", APS News (The Back Page editorial), **19(3)**, pg. 8, March 2010. (editorial)
2. **S. Amador Kane** and Kenneth Laws, "[Hunting for Jobs at Liberal Arts Colleges](#)" *Physics Today*, November 2006, pp.38-42.
3. *Physics of the Human Body* by Irving Herman, *Physics Today*, March 2008, pg. 58. (book review)
4. *Quantum Mechanics: Classical Results, Modern Systems, and Visualized Examples*, Richard Robinett, *Physics Today*, July, 1997. (book review)
5. *Quantum Mechanics: Fundamentals and Applications to Technology*, Jasprit Singh, *Physics Today*, July, 1997. (book review)

Invited Talks (since 2000; science pedagogy presentations noted by ‡)

2020	St. Josephs University	McNulty Seminar
2017	University of Nebraska MRSEC	Keynote speech,
	Conference for Undergraduate Women in the Physical Sciences	
2017	University of Pennsylvania	Condensed Matter Seminar
2016	Kenyon College	Colloquium
2016	Dickinson College	Colloquium
2016	Pennsylvania Conference on Women in Physics	Talk & panel
2015	BFY II: Conference on Laboratory Instruction beyond the first year of college	Plenary talk‡
2014	BLS5: 5 th Biologging Science Symposium (Strasbourg France)	Talk & panel on videologging
2014	University of Illinois, Urbana-Champaign	Physics Colloquium
2013	Haverford College, Presidential Daniel Weiss	Inauguration
		Faculty research panel
2012	Temple University	Biology Colloquium &
		Science Education Lecture ‡
2012	Haverford College	Faculty Research talk
2011	American Physical Society March Meeting	Talk
2011	Princeton University	Collective behavior working group seminar
2011	Cornell University Bioacoustics Research Program	Seminar during bioacoustics workshop
2010	Kutztown University	Physics Colloquium
2010	American Association of Physicists in Medicine	
	Annual Meeting	Talk ‡
2010	APS/AAPT April Meeting	Talk ‡
2010	Centre College	Colloquium ‡
2009	AAPT Advanced Lab Conference	Talk ‡
2008	Ithaca College	Physics Colloquium
2008	American Physical Society March Meeting	Talk (CSWP) ‡
2006	SACNAS National Conference	Talk
2006	University of Richmond	Physics Colloquium
2006	University of the Sciences	Science Colloquium
2006	Allegheny College	Science Colloquium
2006	Kalamazoo College	Physics Colloquium
2005	St. Joseph's University	Physics Colloquium
2003	Lafayette College	Physics Colloquium
2003	Council on Undergraduate Research	Panel discussion ‡
2002	Brown University	Physics Colloquium

2002	Bucknell University	Physics Colloquium
2002	Council on Undergraduate Research	Panel discussion ‡
2001	Villanova University	Physics Colloquium
2001	Colgate University	Physics Colloquium
2001	Williams College	Panel discussion ‡

Contributed Scientific Research Presentations (since 2000)

2021	Society for Integrative and Comparative Biology (talk & poster with student coauthors)
2021	American Physical Society March Meeting (talk with student coauthors)
2020	Society for Integrative and Comparative Biology (two posters with student coauthors)
2019	American Physical Society March Meeting (2 posters with student coauthors)
2018	Society for Integrative and Comparative Biology (talk; poster with student coauthor)
2017	American Physical Society March Meeting (poster with 2 students)
2016	Raptor Research Foundation annual meeting (talk)
2016	Society for Integrative and Comparative Biology (two posters with student coauthors)
2015	Society for Integrative and Comparative Biology (talk)
2014	American Physical Society March Meeting (talk & poster with 3 student coauthors)
2014	Society for Integrative and Comparative Biology (poster with student coauthor)
2010	American Physical Society March Meeting (talk)
2009	American Physical Society March Meeting (talk)
2003	Biophysical Society Annual Meeting (poster with student coauthor)
2002	American Physical Society March Meeting (poster with student coauthor)
2002	Haverford Faculty Research Talk (panel discussion)
2002	Haverford Natural Science Colloquium
2000	Interface between Physics and Biology, University of Pennsylvania (poster, student coauthor)

Contributed Presentations on Pedagogy & Service (since 2000)

2013	Panel discussion on careers in liberal arts colleges, University of Pennsylvania Physics & Astronomy
2012	NEXUS-HHMI workshop: introductory physics for life sciences, University of Maryland (talk)
2011	Northeast Consortium on Medical Education (NECOME) panel discussion, Haverford College, September 23, 2011.
2009	AAPT Summer Meeting (poster)
2007	Mellon Foundation Symposium on Teaching Introductory Physics, Swarthmore College (talk)
2007	Swarthmore/Mellon Physics Conference on Life Sciences (talk)
2006	AAPT Meeting (poster with student)
2006	Math Science Partnership of Greater Philadelphia Annual Meeting (talk)
2005	AAPT Meeting (talk)
2003	Council on Undergraduate Research (poster)
2002	Tricollege Science Teaching symposium, Bryn Mawr College (talk)
2001	Tricollege Science Teaching symposium, Bryn Mawr College (talk)
2000	AAC&U Rethinking Science Literacy Conference, Charleston, SC (poster with K. Edwards)

Media Coverage

- Our 2021 research on spotted lanternfly biomechanics was profiled by *Integrative & Comparative Biology*
- Our 2019 paper in PLoS One on how conspicuous colorful bird feathers are in predator vision was covered in *New Scientist*, *Science Trends*, *Daily Mail* and *MSN.com*, and Haverford alumnus Yuchao Wang was featured on a 2020 episode of Discovery Canada's *ScientistFridays*.

- Our 2018 paper in PLoS One on a possible mechanosensory role for bird feather crests was covered in many media venues, including *The Atlantic*, *Science*, *Scientific American*, *New Scientist*, *Science Daily*, *Phys.org*, *Daily Mail*.
- Our 2016 paper in *The Auk* on how hawks use unpredictable head turns while searching for prey was widely covered in the media, including a TV interview I gave for The Discovery Channel's Daily Planet show.
- Our 2016 PLoS One paper on the biomechanics of the peacock's display was profiled in *The New York Times*, *Wall Street Journal*, *Christian Science Monitor*, *Science News* and many other international media venues. A video posted at The New York Times on this project has received over 180,000 views. R. Dakin and I were asked to do a Reddit "Ask Me Anything" interview on this work.
- Our 2015 *JEB* paper, "When hawks attack: animal-borne video studies of goshawk pursuit and prey evasion strategies" was profiled in *Inside JEB*, *Los Angeles Times*, *The Inquirer*, *The New York Times*, *BBC's Inside Science* and many other international media articles. The video abstract posted at JEB's Youtube channel has received ~ 130K views and the *New York Times* video over 90,000 views.
- Our 2014 *JEB* paper, "Falcons pursue prey using visual cues: new perspectives from animal-borne cameras" was profiled in *Inside JEB* and widely covered in the US and international media. The associated video at JEB's Youtube channel received over 2.6 million views.
- Our American Physical Society March Meeting 2010 talk on mobbing and flocking was covered in an article, "Birds of a Feather Attack Together" www.physorg.com/news192206159.html that was carried widely in the US media.

Professional service & teaching related activities not mentioned above (selected since 2000)

- Reviewer for scientific journals, including *Journal of Experimental Biology*, *Nature Communications*, *PLOS One*, *eLife*, *The American Naturalist*, *Current Biology*, *American Journal of Physics*, American Chemical Society journals, *CBE--Life Sciences Education* and others.
 - Grant reviews for the National Science Foundation, Petroleum Research Fund of the American Chemical Society and the Anniversary Junior Scientist Fellowship Program (JSFP) of the U.S. Civilian Research and Development Foundation (CRDF).
 - Book manuscript reviews for major publishers.
 - Administration of the IPLS (introductory Physics for Life Sciences) email list server for the American Association of Physics Teachers.
- 2017 Talk at the Wonder Physics Camp for middle school aged girls at The University of the Sciences.
- 2015 Research and science careers talk for students at Hilltop Preparatory School (a local grade 6-12 school for students with learning disabilities)
- 2011 Research talk for Harriton High School International Baccalaureate students in the Theory of Knowledge course.
- 2009- Coordination of the physics community response to the AAMC-HHMI report "Scientific Foundations for Future Physicians"
- 2009 Co-organizer, Conference on Physics in Undergraduate Quantitative Life Science Education, Washington DC, October 24, 2009.
- 2004-2008 Member, American Journal of Physics Resource Letters Editorial Board
- 2006 Haverford Summer Science Institute (forerunner of Chesick Scholars) (instructor)
- 2004 NSF Math-Science Partnership Bi-College faculty seminar on New Pedagogies in Math and Science Education
- 2003 Physics of Medical Technology workshop for high school teachers & students (HHMI sponsored Cascade Mentoring workshop, Haverford College)
- 2002 HHMI-funded faculty development workshop in Bioinformatics (Haverford College)

- 2002 Tricollege Multicultural Winter Institute, Swarthmore College, Swarthmore, PA.
(intensive four-day workshop focused on issues of race, ethnicity, socio-economic class,
gender, religion and sexual orientation.)
- 2001 HHMI-funded faculty development workshop on Computing Across the Sciences
- 2001 Women In Science: Opportunity in a Changing Landscape, Bryn Mawr College
- 2001 Building Bridges: Introductory Science Education, Bryn Mawr College

Physics Department External Review Committees

- Washington & Lee 2018
- Bucknell University 2013
- College of the Holy Cross 2012
- University of Richmond 2009
- Colorado College 2008

Grants I have received regular support from Haverford's Faculty Research Fund, the Faculty Support Fund and the Haverford Teaching with Technology Fund.

- 3/2013-2/2015 Marion E. Koshland Integrated Natural Sciences Special Projects Award (\$34,000)
- 2009 National Science Foundation grant: support for the Conference on Scientific Foundations of Future Physicians: How do physics departments respond?, Washington DC, October 24, 2009.
- 10/03-10/08 National Science Foundation Math Science Partnerships of Greater Philadelphia (MSPGP)
Participant in educational activities in a multi-institution grant program (\$1.5M)
- 09/04-01/05 Andrew J. Mellon Foundation New Directions Fellowship
- 7/00-6/05 Packard Corporation, "Protein-based biomaterials for nanotechnology", Co-PI (\$966,020)
- 7/00-6/02 NSF "RUI: Advanced microscopy and manipulation cluster for biological and biophysical studies", Co-PI (\$169,271)
- 1/99-12/00 Zimmer Corporation, "Interdisciplinary studies of structure and reactivity of proteins", Co-PI (\$100,000)
- 1/94-6/98 NSF Course and Curriculum Development Grant (\$36,860)
- 1/95-12/95 Zimmer Corporation, Imaging in Modern Science, Co-PI (\$200,000)
- 6/91-6/93 Research Corporation Cottrell Science Grant, PI (\$20,000)
- 6/91-6/93 Petroleum Research Fund Starter-G grant, PI (\$18,000)
- 6/91-6/93 NSF Research Planning Grant, PI (\$21,700)

I have been involved in writing three of Haverford's grants from the Howard Hughes Medical Institute (all funded) and substantially involved in all of those grants and the related activities.

College service (partial listing of major appointments)

- 2020-2022, 2008-2011: Academic Council (college tenure, promotion & personnel advisory committee; elected)
- 2016-2019, 2002-2007: Chair, Physics & Astronomy Department
- 2021-2022, 2014-2016, 2002-2004: Chair, Biochemistry & Biophysics Concentration
- 2012-2014: Faculty Representative to the Board of Managers (elected)
- 2012-2014: Faculty Affairs and Policy Committee (faculty senate; elected)
- 2005-2008: Director, Marion E. Koshland Integrated Natural Science Center
- 2006-2007: Chair, Art Exhibitions and Outreach Committee
- 2000-2001: Chair, Committee on Student Standing and Programs

Undergraduate research students mentored: 89 total; 32% female; 29% BIPOC