

CURRICULUM VITAE

Edward D. Lipson, Professor of Physics

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8035 Shadowrock Road
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EDUCATION

Ph.D. Physics (nuclear), California Institute of Technology, Pasadena, CA (1971)
(adviser: Felix Boehm)
B.Sc.(Hons.) Physics and Mathematics, University of Manitoba, Winnipeg, Canada (1966)

ACADEMIC EMPLOYMENT

2007-2012	Kauffman Entrepreneurship Professor, Syracuse University
2003-2007	Chair, Department of Physics, Syracuse University
2002-	Adjunct Professor, Department of Electrical Engineering and Computer Science, Syracuse University
1999-	Adjunct Professor, Department of Radiology, Upstate Medical University, State University of New York, Syracuse
1996-1997	Interim Chair, Department of Physics, Syracuse University
1995-1996	Acting Chair, Department of Physics, Syracuse University
1994-2000	Faculty Associate, Northeast Parallel Architectures Center, Syracuse University
1990	Compton Visiting Professor, Department of Biology, Technion (Haifa, Israel; January-May)
1989-1995	Associate Chair, Department of Physics, Syracuse University
1985-	Professor of Physics, Syracuse University
1983-89	Director, Graduate Biophysics Program, Syracuse University
1980-85	Associate Professor of Physics, Syracuse University
1976-80	Assistant Professor of Physics, Syracuse University
1974-76	Senior Research Fellow in Biology, California Institute of Technology
1971-74	Research Fellow in Biology, California Institute of Technology (with Max Delbrück; 1971-76)
Summers 1978 & 1981	Visiting Associate in Biology, California Institute of Technology
Summer 1976	Instructor in course "Phycomycetes: Behavior, Genetics, Biochemistry" at Cold Spring Harbor Laboratory

HONORS

1979-83	Alfred P. Sloan Foundation Fellow
1972-74	NIH Postdoctoral Research Fellow
1966-69	NSF Predoctoral Fellow
1966-67	Woodrow Wilson Fellow (Honorary)
1966	University Gold Medal, Allen Medal in Physics
1962-66	nine scholarships
1964	Governor General's Gold Medal

CURRENT RESEARCH INTERESTS

- Biophysics:** Cellular and molecular bases of the light responses of the microorganisms, including *Phycomyces* and *Chlamydomonas*, model systems for sensory-transduction processes in single cells. Research approaches include physiology (including nonlinear system identification), genetics, biochemistry, and spectroscopy.
- Medical Physics:** Human-computer interfaces, particularly for people with severe physical disabilities (custom software, sensors and transducers, and interface electronics). Telemedicine. Nuclear medicine and medical imaging (SPECT, PET, MRI, CT, and micro-CT).
- Building Automation:** Smart-building and green technologies for environmental and energy systems in commercial, residential, and community settings.

ENTREPRENEURSHIP

Founding partner of MindTel LLC (1997), SenSyr LLC (2003), and IndoorControls LLC (2011)

GRANTS RECEIVED

- “Syracuse Entrepreneurial Ecosystem Development (SEED)” Chancellor's Leadership Project grant, \$200,000 (funding from Chancellor Cantor, Kauffman Grant, SyracuseCoE; shared with three SU faculty co-PI's) 7/1/09 to 6/30/11
- “Electronic Interfacing for Environmental and Energy Systems and for Assistive Technology” 1/1/08 to 6/30/11, \$120,000 (combined funding from Kauffman Foundation grant to SU (‘Syracuse Campus-Community Entrepreneurship Initiative’ [SCCEI]), and cost sharing from Syracuse Center of Excellence in Environmental and Energy Systems (SyracuseCoE)
- “MR Diffusion-Weighted and Parametric Breast Imaging Combined with MR Spectroscopy and Parametric PET/CT for Enhanced Breast Cancer Detection.” 7/1/2009 to 6/30/2010, \$11,642 (SU subaward under grant to Upstate Medical University [Andrzej Krol, PI] from Carol M. Baldwin Breast Cancer Research Fund, Inc.).
- “Ultrafast laser-based x-ray in-vivo phase-contrast micro-CT” National Institutes of Health, 9/1/05 to 8/31/09, \$126,000 total (subgrant of main grant to SUNY Upstate Medical University. A. Krol, PI)
- “Nonlinear Dynamics of Cellular Signal Transduction” National Institutes of Health, 7/1/01 to 6/30/05, approx. \$1,254,970 (with K. Foster, PI, et al.)
- “Physio-Info-Tronics for Perceptualization Environments: An Anthrotronic Interface System for the Emerging Information-Communication Matrix” SPAWAR Systems Center, San Diego, 7/1/01 to 6/30/05, approx. \$3,990,109 (with D. Warner, PI, et al.; note that the dollar amount is a limit rather than an initial commitment; as of July, 2004, the budget has reached \$1,530,060)

- “Improving PC Accessibilty with NeatTools” Microsoft Corporation, 4/1/99-3/31/02,
\$50,000 (direct costs, plus software donation valued at \$42,911)
- “The Pulsar Project: Affordable Human-Computer Interfaces for the Severely Disabled”
NEC Foundation, 12/1/98-11/30/01, \$40,000 (direct costs)
- “BotMasters: An Interactive Wearable Universal Human-Computer-Interface System”
Defense Advanced Research Projects Agency, 7/1/98–12/31/00, \$1,349,720 (with
D. Warner and G. Fox)
- “The Grok Box — An Interactive Perceptualization Environment”
Defense Advanced Research Projects Agency, 5/29/97–11/30/00, \$879,500 (with
D. Warner and G. Fox)
- “Information Technology in Service of Science Education”
National Science Foundation, 3/15/96 to 3/14/00, \$200,000 (co-PI; with G. Vidali et al.)
- “Integration of Information Age Networking and Parallel Supercomputer Simulations into
University General Science and K-12 Curricula,”
National Science Foundation, 11/1/95 to 4/30/03, \$940,435 (plus supplements of \$25,000
[REU] and \$350,000 [vBNS]; I was PI of this grant)
- “Cooperation in Applied Science and Technology (with Newly Independent States of
Former Soviet Union)”
National Research Council, 1/1/93 to 3/31/94, \$11,100
- “System Analysis of *Phycomyces* Photoresponses”
National Institutes of Health, 6/1/90 to 5/31/95, \$506,211
- “Blue Light Photoreceptors in *Phycomyces*”
National Science Foundation, 7/1/87 to 6/30/94 \$214,000
- “Acquisition of ultracentrifuge, liquid scintillation counter, autoclave, and water purification
system for photosensory research in microorganisms”
National Science Foundation, 6/1/89 to 11/30/91, \$58,113
(joint grant with Dr. Kenneth Foster, SU Physics Dept.)
- “Blue Light Receptors in Fungi: Biophysical, Molecular, and Genetic Approaches”
United States-Israel Binational Science Foundation, 9/1/87 to 8/31/90, \$75,000
(joint grant with Dr. B. Horwitz of the Technion in Haifa)
- “System Analysis of *Phycomyces* Photoresponses”
National Institutes of Health, 6/1/86 to 5/31/90, \$179,059
- “Cellular Photobiology of *Phycomyces*”
US-Spain Joint Committee for Scientific and Technological Cooperation,
1/1/85 to 12/31/87, \$30,000
(joint grant with Dr. E. Cerdá-Olmedo, University of Seville)
- “Genetic Analysis of *Phycomyces* Light Response System”
National Science Foundation, 3/1/84 to 8/31/87, \$205,000
- “System Analysis of *Phycomyces* Photoresponses”
National Institutes of Health, 7/1/81 to 6/30/85, \$357,326

“Biochemical Analysis of Photosensory Transduction in *Phycomyces*”

Senate Research Committee, Syracuse University, 1984

“Genetic Analysis of *Phycomyces* Light Response System”

National Science Foundation, 9/1/80 to 2/29/84, \$162,000

Alfred P. Sloan Research Fellowship

Alfred P. Sloan Foundation, 9/16/79 to 9/15/83, \$20,000

“System Analysis of *Phycomyces* Photomutants”

National Institutes of Health, 7/1/77 to 12/31/80, \$179,059

PATENTS RECEIVED

“Open web services-based indoor climate control system”

(US Patent 7,904,209; dated March 8, 2011; assignee: Syracuse University)

Inventors: Marek Podgorny, Luke Beca, Roman Markowski, Edward A. Bogucz, Suresh Santanam, Edward Lipson, Paul Roman, Greg Michalak, Gregg Lewandowski, and Paul D. Gelling

THESES AND DISSERTATIONS DIRECTED

[Current Physics Ph.D. student: Levon Vogelsang]

Russell Kincaid, “Exploration of *in-vivo* phase-contrast micro-computed tomography with a laser plasma-based x-ray source,” Ph.D., December 2010

Alphonso Magri, “Noninvasive Breast Biopsy Method Using Gd-DTPA Contrast Enhanced MRI Series and F-18-FDG PET/CT Dynamic Image Series,” Ph.D., May 2010

Taviare Hawkins, “Biophysical Applications of Parallel Cascade Identification,” Ph.D., December 2009

Hongwei Ye, “Development and Implementation of Fully 3D Iterative Reconstruction Approaches in SPECT with Parallel-, Fan- and Cone-beam Collimators,” Ph.D., May 2008

Paul Schmidt, “Light Interactions with *Phycomyces* Sporangiohores Investigated with Optical and Biochemical Approaches,” M.S., May 1991

Chafia Trad, “Blue Light Photoreception in *Phycomyces*: Spectrophotometric and Biochemical Analyses,” Ph.D., May 1987

Anuradha Palit, “Nonlinear System Analysis of Light-Growth Response in Behavioral Mutants of *Phycomyces*,” Ph.D., May 1987

Promod Pratap, “Nonlinear System Analysis of *Phycomyces* Light-Growth Response with Sum-of-Sinusoids Test Stimuli,” Ph.D., May 1986

John Pollock, “Biochemical Analysis of Flavoproteins from *Phycomyces* Sporangiohores as Blue Light Receptors,” Ph.D., June 1984

Maharabooshanam Krishnamoorthy, “Computation of Wiener Kernels of a Microbial Stimulus-Response System,” M.S., June 1978

COURSES TAUGHT

PHY 105/106	Science for the 21st Century
PHY 200	Science for the 21st Century (pilot course in 92/93)
PHY 212	General Physics (laboratory)
PHY 277	Physics for the Biological Sciences

PHY 315	Biophysics
PHY 423	Intermediate Mechanics II (through Fall 2000)
PHY425	Electromagnetics II
PHY 515	Biophysics
PHY523	Intermediate Mechanics II (as of Fall 2001)
PHY523	Advanced Mechanics (as of Fall 2009)
PHY 551	Optics (lecture and laboratory course)
PHY 651	Selected Topics in Optics
PHY 715/716/720	Selected Topics in Biophysics

SERVICE (major assignments only)

Department of Physics

Chair, Physics Department, 2003-2007
 Acting/Interim Chair, Physics Department 1995-1997
 Associate Chair, Physics Department 1989-1999
 Member Planning Committee 1985-1997
 Chair, Tenure and Promotions Committee 1984-1989

College of Arts and Sciences

Chair, Faculty Council 2004-
 Member, Life Sciences Committee 2001-2003
 Member, Executive Committee, Doctoral Program in Structural Biology, Biochemistry
 and Biophysics 2000-2010
 Member, Executive Committee, Graduate Biophysics Program, 1989-2000
 Director, Graduate Biophysics Program 1983-1989
 Member, Search Committee for Dean 1985-1986
 Member, Promotions Committee 1981-1982, 1985-1986
 Member, Faculty Council 1982-1983
 Chair, Faculty Council Subcommittee Reviewing Tenure and Promotions Procedures
 1982-1983
 Member, Graduate Biophysics Program 1976-2000

University

Member, University Academic Space Advisory Committee 1999-2001
 Member, Chancellor's Task Force for Developing Guiding Principles for the Long-Range
 Budget Plan 1994-1995
 Chair, Senate Budget Committee's ad hoc Subcommittee on Finances of Athletics
 Department and Carrier Dome 1993-1994
 Member, Senate Budget Committee 1993-1995
 Member, Committee to Review University-Wide Services for Graduate Students 1992-93
 Member, Board of Graduate Studies 1991-1994
 Member, Computational Neuroscience Program 1991-1995
 Member, University Senate 1990-1992, 1993-1997
 Member, Senate Academic Affairs Committee 1990-1992
 Member, Neuroscience Program 1984-1997
 Member, Senate Research Committee 1979-80

Community

Judge in Annual Scholastic Science Fair 1979-1986

Instructor in “Frontiers of Science” program (NSF-supported lecture and laboratory program to acquaint high school teachers with scientific research) 1985, 1990

President, Syracuse Friends of Chamber Music 1987-1988

Profession

Member of Evaluation Committee for the 1997 Kuwait Prize in Basic Sciences, Kuwait Foundation for the Advancement of Science, Kuwait City, Kuwait, November 15-19, 1997

Program chair of Spring Meeting (topic: *Biological Physics*) of American Physical Society New York State Section, Syracuse University, Syracuse, NY, April 10-11, 1992

Co-organized international scientific meeting on *Phycomyces* research held at Banbury Conference Center, Cold Spring Harbor Laboratory, Long Island, New York, August 2-8, 1982

Co-organized international scientific meeting on *Phycomyces* research held at la Residencia de la Universidad de Sevilla, La Rábida, Huelva, Spain, June 8-13, 1986

OTHER PROFESSIONAL DATA*Memberships in Professional Societies*

APS—American Physical Society

AAAS—American Association for the Advancement of Science

IEEE—The Institute of Electrical and Electronics Engineers

EMBS—Engineering in Medicine and Biology Society (under IEEE)

Elected Office in Professional Societies

Council Member, American Society for Photobiology 1989-1992

Appointed Offices in Professional Societies

Chair, Public Affairs Committee, American Society for Photobiology, 1991-1993

Chair, Publications Committee, American Society for Photobiology, 1990-1991

Member, Awards Committee, American Society for Photobiology, 1989-1991