

## CURRICULUM VITAE

Edward D. Lipson, Professor of Physics

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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

2007-2009 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 disabilities (custom software, sensors and transducers, and interface electronics). Telemedicine. Nuclear medicine and medical imaging (SPECT, PET, MRI, etc.).
- Building Automation:** Smart-building and green-building technologies for environmental and energy systems in commercial and residential settings.

## GRANTS RECEIVED

- “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 Accessibility 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

## **THESES AND DISSERTATIONS DIRECTED**

[Current Physics Ph.D. students: Taviare Hawkins, Russell Kincaid, Alphonso Magri, and Levon Vogelsang]

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)
PHY 515	Biophysics
PHY 523	Intermediate Mechanics II (as of Fall 2001)
PHY 551	Optics (lecture and laboratory course)
PHY 651	Selected Topics in Optics
PHY 715/716/720	Selected Topics in Biophysics

## SERVICE

### *Department of Physics*

- Chair, Physics Department Space Committee, 2007-
- Chair, Physics Department, 2003-2007
- Chair, Faculty Search Committee (Biological Physics) 2003-2004
- Member Faculty Search Committee 1998-2002
- Member Undergraduate Committee 1998-2002
- Acting/Interim Chair 1995-1997
- Associate Chair 1989-1995
- Member Graduate Admissions Committee 1991-1997
- Colloquium Series Coordinator, Department of Physics 1989-1994
- Member Planning Committee 1985-1997
- Chair, Tenure and Promotions Committee 1984-89
- Member Chair Review Panel 1984-89
- Member Faculty Search Committee 1983-84
- Member Undergraduate Committee 1981-82
- Member Graduate Committee 1977-80 (Chair 1979-80)

### *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-

Member, Executive Committee, Graduate Biophysics Program, 1989-2000  
 Director, Graduate Biophysics Program 1983-89  
 Member, Search Committee for Dean 1985-86  
 Member, Promotions Committee 1981-82, 1985-86  
 Member, Faculty Council 1982-83  
 Chair, Faculty Council Subcommittee Reviewing Tenure and Promotions Procedures  
 1982-83  
 Member, Graduate Biophysics Program 1976-2000

#### *University*

Member, Space Advisory Committee 1999-2001  
 Member, Chancellor's Task Force for Developing Guiding Principles for the Long-Range  
 Budget Plan 1994-95  
 Chair, Senate Budget Committee's ad hoc Subcommittee on Finances of Athletics  
 Department and Carrier Dome 1993-94  
 Member, Senate Budget Committee 1993-95  
 Member, Committee to Review University-Wide Services for Graduate Students 1992-93  
 Member, Board of Graduate Studies 1991-94  
 Member, Computational Neuroscience Program 1991-95  
 Member, University Fellowship Subcommittee for Natural Sciences and Mathematics  
 1991  
 Member, University Senate 1990-92, 1993-97  
 Member, Senate Academic Affairs Committee 1990-92  
 Member, Neuroscience Program 1984-97  
 Member, Senate Research Committee 1979-80

#### *Community*

Judge in Annual Scholastic Science Fair 1979-86  
 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 1987-88

#### *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  
SPIE—The International Society for Optical Engineering

*Elected Office in Professional Societies*

Council Member, American Society for Photobiology 1989-92

*Appointed Offices in Professional Societies*

Chair, Public Affairs Committee, American Society for Photobiology, 1991-93

Chair, Publications Committee, American Society for Photobiology, 1990-91

Member, Awards Committee, American Society for Photobiology, 1989-91