

Roland E. Allen

Department of Physics and Astronomy
Texas A&M University
College Station, Texas 77843-4242

allen@tamu.edu , <http://people.physics.tamu.edu/allen/>

Education: B.A., Physics, Rice University, 1963
Ph.D., Physics, University of Texas at Austin, 1968

Research: Theoretical Physics

Positions:

Research Associate, University of Texas at Austin, 1969 - 1970
Resident Associate, Argonne National Laboratory, summers of 1967 - 69
Assistant Professor of Physics, Texas A&M University, 1970 - 1976
Associate Professor of Physics, Texas A&M University, 1976 - 1983
Sabbatical Scientist, Solar Energy Research Institute, 1979 - 1980
Visiting Associate Professor of Physics, University of Illinois, 1980 - 1981
Professor of Physics, Texas A&M University, 1983 – Present

Honors and Research Activities

Honors Program Teacher/Scholar Award, 2005
University Teaching Award, 2004
College of Science Teaching Award, 2003
Deputy Editor, *Physica Scripta* (published for Royal Swedish Academy of Sciences), 2013-2016
Service on NSF, DOE, and university program evaluation panels, 1988-present
Co-organizer of Richard Arnowitt Symposium (September 19-20, 2014)
Organizer of Second Mitchell Symposium on Astronomy, Cosmology, and Fundamental Physics
(April 10-14, 2006)
Organizing Committee, Fifth Conference on Dark Matter in Astroparticle Physics (October 3-9, 2004)
Organizer of Mitchell Symposium on Observational Cosmology (April 11-16, 2004)
Organizer of Institute for Quantum Studies Research for Undergraduates Program (Summer, 2003)
Organizer of Richard Arnowitt Fest (April 5-8, 1998)
Co-organizer: 1984 Workshop on Theory and Modeling for Materials Design
1989 International Workshop on Surface Dynamics
1995 Conference on Physics and Chemistry of Semiconductor Interfaces
Editorial Board, *Superlattices and Microstructures*, 1994-2003
Fellow of the American Vacuum Society
Executive Committee, Texas Section of the American Physical Society (2004-2007)

Representative Talks at Conferences

“A fresh perspective on black hole entropy and information”, invited talk at Physics of Quantum Electronics (January 8-12, 2018, Snowbird, Utah).

“Dark matter: theory and experiments”, seminar at Southwest Research Institute (December 18, 2017, San Antonio).

“Ultrafast phase transitions in advanced materials, including light-induced superconductivity”, invited talk at 26th International Laser Physics Workshop (July 17-21, Kazan, Russia).

“Ultrafast Phase Transitions in Advanced Materials, including Light-Induced Superconductivity”, invited talk at Frontiers of Quantum and Mesoscopic Thermodynamics (July 9-15, Prague, Czech Republic).

“Ultrafast phase transitions in advanced materials: review of some experiments and a new theoretical approach”, APS March Meeting, New Orleans, March 13-17, 2017.

“Ultrafast phase transitions in advanced materials responding to fast intense laser pulses, including light-induced superconductivity”, invited talk at Frontiers in Theoretical and Applied Physics (February 22-25, 2017, Sharjah, United Arab Emirates).

“Dark matter candidate with well-defined mass and couplings”, APS ‘April’ Meeting, Washington D.C., January 28-31, 2017.

“Ultrafast phase transitions in advanced materials responding to fast intense laser pulses, including light-induced superconductivity”, invited talk at Physics of Quantum Electronics 2017 (January 8-13, Snowbird, Utah).

“Electronic and structural response of materials to fast intense laser pulses, including light-induced superconductivity”, invited talk at Central European Workshop on Quantum Optics (June 27 – July 1, 2016).

“Electronic and structural response of materials to fast intense laser pulses, including light-induced superconductivity”, keynote talk at SPIE conference on Ultrafast Bandgap Photonics (Baltimore, April 18-20, 2016).

“Phenomenology of fundamental spinons”, Meeting of the APS Division of Particles and Fields (August 4-8, 2015, Ann Arbor, Michigan).

“Three Higgs-related predictions, including $Z^0 \rightarrow$ new spin $\frac{1}{2}$ particles”, APS April Meeting, Baltimore, 2015.

“Photoisomerization dynamics of a rhodopsin-based molecule (potential molecular switch) with high quantum yields”, APS March Meeting, San Antonio, 2015.

“The Higgs bridge: a tutorial for students and teachers”, APS April Meeting, Savannah, 2014.

“Kadanoff-Baym-Keldysh-Ehrenfest dynamics of correlated materials responding to ultrafast laser pulses”, APS March Meeting, Denver, 2014. [given by Lazar Kish]

“Predictions of a fundamental statistical picture”, 20-minute talk at the Meeting of the American Physical Society Division of Particles and Fields (Santa Cruz, August, 2013).

“Life in the Higgs condensate, where electrons have mass”, an invited talk at the Conference on Frontiers of Quantum and Mesoscopic Thermodynamics (Prague, July, 2013).

“Kadanoff-Baym-Keldysh-Ehrenfest dynamics of correlated materials responding to fast intense laser pulses”, April Meeting of the American Physical Society (Denver, 2013).

“Biochemical response and the effects of bariatric surgeries on type 2 diabetes”, March Meeting of the American Physical Society (Baltimore, 2013).

“Life in the Higgs condensate, where electrons have mass”, an invited talk at the 43rd Winter Colloquium on the Physics of Quantum Electronics (Snowbird, January, 2013).

“Theory and experiment in biomedical science”, an invited talk at Fall Meeting of the Texas Section of the American Physical Society (Lubbock, October, 2012).

“Response of molecules and materials to fast intense laser pulses”, an invited talk at Workshop on Breaking and Making Bonds with Light (Telluride, July, 2012).

“Mechanism for family replication in supersymmetric SO(10)”, April Meeting of the American Physical Society (Anaheim, 2011).

“Optimizing laser pulses for controlled excitation of materials and molecules”, APS 2011 March Meeting (Dallas).

“Response of materials and molecules to fast intense laser pulses”, an invited talk at Workshop on Large Scale Simulations in Materials Science and Biophysics (Arizona State University, January, 2011).

“Control of specific vibrational modes in carbon nanotubes and fullerenes responding to fast intense laser pulses”, APS 2010 March Meeting (Portland).

“Origin of the Lorentzian metric, standard supersymmetry, and an effective Higgs field”, an invited talk at Conference on Beyond the Standard Models of Particle Physics, Cosmology, and Astrophysics (Cape Town, South Africa, February, 2010).

“Coupling of electrons to the electromagnetic field in a localized basis”, APS 2009 March Meeting (Pittsburgh).

“Toward molecular switches and biochemical detectors employing adaptive femtosecond-scale laser pulses”, APS 2008 March Meeting (New Orleans).

“Supersymmetric SO(N) from a Planck-scale statistical theory”, an invited talk at Workshop on Standard Model and Beyond in the LHC Era (Valparaiso, Chile, January, 2008).

“Supersymmetric dark matter candidate (neutralino) from a fundamental statistical theory”, an invited talk at Sixth International Heidelberg Conference on Dark Matter in Astro and Particle Physics (Sydney, Australia, September, 2007).

“Toward molecular switches and biochemical detectors employing adaptive femtosecond-scale laser pulses”, an invited talk at Laser Physics 2007 conference (Leon, Mexico, August, 2007).

“Response of biological molecules to adaptive femtosecond-scale laser pulses”, an invited talk at the Summer School on Quantum Optics and Molecular Physics (Casper, Wyoming, July, 2007).

“Comparison of vibrational and electronic properties of dipicolinic acid with its parent ring molecule, pyridine”, an invited talk at Frontiers of Nonlinear Physics 2007 (on the Volga River, from Nizhny Novgorod to Saratov, Russia, July, 2007).

“Azobenzene isomerization and the prospects for optical molecular switches”, an invited talk at the

Symposium on Quantum Mechanics, Informatics, and Control (Princeton University, April, 2007).

“Supersymmetry and Lorentz invariance as low-energy symmetries in a fundamental statistical theory”, Joint Meeting of Pacific Region Particle Physics Communities (Waikiki, Hawaii, October 20 – November 3, 2006).

“Supersymmetry and Lorentz invariance as low-energy symmetries in a fundamental statistical theory”, 2006 international symposium on Particles, Strings and Cosmology (PASCOS06), Ohio State University, Columbus, Ohio, September 10-15, 2006.

“Response of Dipicolinic Acid to Ultrafast Laser Pulses”, an invited talk at the International Conference on Coherent Control of Fundamental Processes in Optics and X-ray Optics (on the Volga River, from Nizhny Novgorod to Kazan, Russia, June 29 - July 3, 2006).

“Supersymmetry from a Fundamental Statistical Theory: Further Implications”, April Meeting of the American Physical Society (Dallas, April 22–25, 2006)

“Vibrational modes of dipicolinic acid, and their role in the response to femtosecond-scale laser pulses”, an invited talk at the 36th Winter Colloquium on The Physics of Quantum Electronics (Snowbird, January, 2006).

“Response of Biomolecules to Ultrafast Laser Pulses”, 2005 March Meeting of the American Physical Society (Los Angeles).

“Response of benzene and dipicolinic acid to ultrafast laser pulses”, an invited talk at the 35th Winter Colloquium on The Physics of Quantum Electronics (Snowbird, January, 2005).

“Predictions of Lorentz-Violating Supergravity”, 10th international symposium on Particles, Strings and Cosmology (PASCOS’04), Northeastern University, Boston, August 16-22, 2004.

“Lorentz-Violating Supergravity and Its Experimental Signatures”, 3rd Meeting on CPT and Lorentz Symmetry, August 4-7, 2004, Indiana University, Bloomington.

“Response of Matter to Ultrafast Laser Pulses”, an invited talk at the 2nd International Conference on Frontiers of Nonlinear Physics (on the Volga River, from Nizhny Novgorod to St. Petersburg, Russia, July 5-12, 2004).

“The intricate dance of electrons and nuclei during a photochemical reaction”, an invited talk at the 34th Winter Colloquium on The Physics of Quantum Electronics (Snowbird, January, 2004).

"Searching for Lorentz Violation", an invited talk at the Second International Conference on Particle and Fundamental Physics in Space (Washington, D.C., December, 2003).

"Chemical systems and femtosecond-scale laser pulses", an invited talk at the 2003 Workshop on Quantum Optics (Grand Targhee Resort, near Jackson Hole, Wyoming, July, 2003).

"Dark Matter, Quantum Gravity, Vacuum Energy, and Lorentz Invariance", Fourth Conference on Physics Beyond the Standard Model (Castle Ringberg, Tegernsee, Germany, June, 2003).

"Simulations of the cis-trans photoisomerization of butadiene," 2003 March Meeting of the American Physical Society (Austin).

"Molecular Transformations following Femtosecond-scale Laser Pulses" an invited talk at the 33rd Winter Colloquium on The Physics of Quantum Electronics (Snowbird, January, 2003).

"Higgs Bosons and Dark Matter in Supersymmetric Scenarios with R-Parity Violation and Possible Violations of Lorentz Invariance", Third Conference on Physics Beyond the Standard Model (Oulu, Finland, June, 2002).

"Lorentz Invariance and Higgs Decays", 2002 Meeting of the APS Division of Particles and Fields (College of William and Mary, Williamsburg, May, 2002).

"Semiempirical Electron-Photon-Ion Dynamics of Chemical and Biological Systems", 2002 March Meeting of the American Physical Society (Indianapolis).

"Dark Matter and Lorentz Invariance", Second Meeting on CPT and Lorentz Symmetry (Indiana University, August, 2001,).

"Dark Matter Equation of Motion and Density Profiles", PASCOS 2001 International Symposium on Particles, Strings and Cosmology (University of North Carolina, April, 2001).

"Electronic and Structural Response of Materials to Fast Intense Laser Pulses", an invited talk at the SPIE Conference on Ultrafast Phenomena in Semiconductors (San Jose, January, 2001).

"Mechanisms for Laser Control of Chemical Reactions", an invited talk at the 31st Winter Colloquium on The Physics of Quantum Electronics (Snowbird, January, 2001).

"Response of Materials to Fast Intense Laser Pulses", Seminar at Lawrence Livermore National Laboratory (September, 2000, in conjunction with Livermore workshop on this general topic).

"Mechanism for a Small but Nonzero Cosmological Constant", NORDITA conference on Problems with Vacuum Energy (Copenhagen, August, 2000).

"The Higgs as a Supersymmetric Partner, with a New Interpretation of Yukawa Couplings", DPF2000 Meeting of APS Division of Particles and Fields (Ohio State University, August, 2000).

"Spin-Zero SUSY WIMPs", Phenomenology 2000 Symposium (Madison, Wisconsin, April, 2000).

"Response of Molecules and Materials to Fast Intense Laser Pulses", 30th Winter Colloquium on The Physics of Quantum Electronics (Snowbird, Utah, January, 2000).

"Equation of Motion of the Higgs Boson", Seventh International Symposium on Particles, Strings and Cosmology (Lake Tahoe, California, December, 1999).

"Interaction of Light with Biological Molecules", Symposium on New Advances in Materials Prediction, at the Fall Meeting of the Materials Research Society (Boston, November, 1999).

"Response of Semiconductors and Fullerenes to Ultrashort and Ultra-intense Laser Pulses", Symposium on Computational Approaches to Predicting the Optical Properties of Materials, at the Fall Meeting of the Materials Research Society (Boston, November, 1999).

"Lorentz Invariance at LHC Energies", Second International Conference on Physics Beyond the Standard Model (Tegernsee, Germany, June, 1999).

"Simulations of the Response of Chlorophyll and Retinal to Light", Centennial Meeting of the American Physical Society (Atlanta, March, 1999).

"Failure of Lorentz Invariance at LHC Energies", CPT98 Meeting on CPT and Lorentz Invariance (Bloomington, Indiana, November, 1998).

"Geometry Versus Electronic Effects in Scanning Tunneling Microscopy: The Arsenic Vacancy on GaAs(110)", 24th International Conference on the Physics of Semiconductors (Jerusalem, August, 1998).

"Instanton Cosmology", April Meeting of the American Physical Society (Columbus, Ohio, 1998).

"Observational Tests of Instanton Cosmology", The Richard Arnowitt Fest (George Bush Library, April, 1998).

"Electronic and Structural Response to Ultrafast Laser Pulses", an invited talk at the 1998 March Meeting of the American Physical Society (Los Angeles).

"Tight-Binding Electron-Ion Dynamics: A Method for Treating Nonadiabatic Processes and Interactions with Electromagnetic Radiation", Fall Meeting of the Materials Research Society (Boston, December, 1997).

"Instanton Cosmology", Sixth International Symposium on Particles, Strings and Cosmology (Northeastern University, Boston, March, 1998).

"Response of Semiconductors to Fast Intense Laser Pulses," Workshop on Quantum Optics (Taos, August, 1997).

"Calculations of Transmission Resonances in the Bipolar Quantum Resonant Tunneling Transistor," March Meeting of the American Physical Society (Kansas City; March, 1997).

"Simulations of GaAs and H₂⁺ in Intense Laser Fields," an invited talk at the Texas Section Meeting of the American Physical Society (Lubbock; October, 1995).

"Simulating Nonadiabatic Processes in Quantum Chemistry and Materials Science," an invited talk at the Symposium on High-Performance Computing (Phoenix, April, 1995).

"Structure and Dynamics of Anion and Cation Vacancies at III-V(110) Surfaces," 22nd Conference on the Physics and Chemistry of Semiconductor Interfaces (Phoenix, January, 1995).

"Electron-Ion Dynamics: A New Technique for Simulating Both Electronic Transitions and Atomic Motion in Molecules and Materials," 41st Symposium of the American Vacuum Society (Denver, October, 1994).

"Characterization of the Ga Vacancy on GaAs(110)," an invited talk at the 22nd International Conference on the Physics of Semiconductors (Vancouver, Canada; August, 1994).

"Quantum Molecular Dynamics and Electron-Ion Dynamics: Versatile Techniques for Simulations of Defects and Growth on Semiconductor Surfaces," an invited talk at the Centre Europeen de Calcul Atomique et Moleculaire Workshop on Computer Simulation of the Growth of Semiconductor Materials (Lyon, France; June, 1994).

"Semiconductor Surface Defects Studied Through Scanning Tunneling Microscopy and Tight-Binding Molecular Dynamics," Workshop on Dynamical Phenomena at Crystal Surfaces (Irvine, California; June, 1994).

"Excited-State Molecular Dynamics and Constrained Molecular Dynamics for Simulations of Epitaxial Growth," 1994 March Meeting of the American Physical Society (Pittsburgh).

"(2x1) to c(4x2) Phase Transition at the Si(100) Surface," 20th International Conference on Low Temperature Physics (Eugene, Oregon; August, 1993).

"Computational Studies of Real Materials," Third Conference on Computational Materials Research (Morgantown, West Virginia; May, 1993).

"Tight-Binding Molecular Dynamics Simulations of GaAs Surface Vacancies," Gordon Conference on Scanning Tunneling Microscopy (Ventura, California; March, 1993).

"Computational Studies of Real Materials," Mardi Gras Conference on Concurrent Computing in the Physical Sciences (Baton Rouge, Louisiana; February, 1993).

"Atomic Forces in Scanning Tunneling Microscopy on Si(100): From Weak to Intense Fields," 21st International Conference on the Physics of Semiconductors (Beijing, China; August, 1992).

"Polarization of Electronic Charge and Distortion of Surface Geometry by an STM Tip," 38th National Symposium of the American Vacuum Society (Seattle, November, 1991).

"Energy Surface and Dynamics of Si(100)," 38th National Symposium of the American Vacuum Society (Seattle, November, 1991).

"Dimer Switching on Si(100)," International Conference on Scanning Tunneling Microscopy (Interlaken, Switzerland; August, 1991).

"Influence of STM Tip on Electronic Structure and Geometry: Si(100) Dimers," International Conference on Scanning Tunneling Microscopy (Interlaken, Switzerland; August, 1991).

"Computer Studies of Relaxation and Reconstruction of Semiconductor Surfaces," 37th National Symposium of the American Vacuum Society (Toronto, October, 1990).

"Simulations of Single and Double Step Growth on Si(100)," 37th National Symposium of the American Vacuum Society (Toronto, Canada; October, 1990).

"Equilibrium Chemisorption Geometries and Electronic Structures of Bi, Sb, Sn, Al, and Au Clusters on III-V Semiconductors," 5th International Conference on the Physics of Electro-Optic Microstructures and Microdevices (Heraklion, Crete; August, 1990).

"Surface Phonons in III-V Semiconductors," an invited talk at the International Workshop on Surface Dynamics (Austin, November, 1989).

"Novel Surface Phonon Branches in III-V Semiconductors," 36th National Symposium of the American Vacuum Society (Boston, November, 1989).

"Simulation of Chemical Reactions on Semiconductor Surfaces," an invited talk at the Workshop on Molecular Dynamics Simulations (Laguna Beach, California; March, 1989).

"Simulations of Atomic Processes at Semiconductor Surfaces", an invited talk at the World Materials Congress (Chicago, September, 1988).

"Reaction of Atoms, Metallic Clusters, and Diatomic Molecules with III-V Semiconductor Surfaces", 19th International Conference on the Physics of Semiconductors (Warsaw, Poland; August, 1988).

"Simulations of Atomic Processes at Semiconductor Surfaces", an invited talk at the March Meeting of the American Physical Society (New Orleans, March, 1988).

Ph.D. Students Supervised (name, year Ph.D. received; first job)

Chenwei Jiang, 2010; 2 years research at Texas A&M for Ph.D. from Xi'an Jiaotong University.

Antonio Mondragon, 2007; instructor at Blinn College and Stephen F. Austin State University.

Seiichirou Yokoo, 2006; postdoctoral research scientist, Cognitive Brain Mapping Laboratory, Brain Science Institute, RIKEN Research Institute, Japan.

Ben Torralva, 2001; research associate, Lawrence Livermore National Laboratory (followed by staff physicist, Lawrence Livermore National Laboratory).

Traian Dumitrica, 2000; research associate, Rice University (followed by assistant professor, University of Minnesota).

Robert Hamilton, 1999; Dell Computer, Austin.

Qingsheng Gao, 1998; Rare Medium /Attension Inc., San Antonio.

Shahram Khosravi, 1997; computer science department at Texas A&M.

John S. Graves, 1997; Raytheon /E-Systems, Dallas.

Brent A. Richert, 1989; assistant professor, Air Force Academy, Colorado Springs. Received Distinguished Graduate Student Award; also graduate student awards from Texas chapter of the American Vacuum Society (Dallas, 1988) and national Materials Research Society (Boston, 1988).

Marcin Staszewski, 1988; instructor, Jagellonian University, Cracow, Poland.

Shangfen Ren, 1986; research associate, University of Illinois (followed by assistant, associate, and full professor at Illinois State University); now an APS Fellow.

Hunhwa Lim, 1984; assistant professor, Kyung-Hee University, South Korea (followed by associate professor and professor).

Richard P. Beres, 1982; Texas Instruments, Houston (followed by Texas Instruments, Dallas).

William R. Lawrence, 1976; assistant professor, University of Houston at Clear Lake (followed by associate professor and full professor).

Rodger W. Hardy, 1975; visiting assistant professor, University of Houston (followed by NCR, Colorado Springs; Solar Energy Research Institute, Denver; McDonnell-Douglas, St. Louis).

Vernon E. Kenner, 1973; Teledyne-Brown, Huntsville, Alabama (followed by LTV, Dallas). Received Distinguished Graduate Student Award.

M.S. Students Supervised

Andrea Burzo, 2001; continued on as a Ph.D. student in experimental quantum optics.
Yongjun Tang, 1999; left to seek a Ph.D. in Economics.
Antonio Mondragon, 1996; continued on as a Ph.D. student.
Yi Liu, 1995; employed by Vitesse Semiconductor Corporation, Dallas.
Pradip Das, 1994; employed as computer analyst by State Farm in Bloomfield, Illinois.
Jianfeng Shao, 1991 (CUSPEA student); entered Ph.D. program in materials research, University of Minnesota.
Jin Liu, 1991; entered Ph.D. program in electrical engineering, Southern Methodist University.
Waltrand Teresa Taferner, 1990; entered Ph.D. program in experimental physics, University of Houston.
Chomsik Lee, 1989; entered graduate program in electrical engineering, Texas A&M University.
Stephen Blount, 1985; employed by Mission Research Corporation, Santa Barbara, California.
Jack Denur, 1975; entered Ph.D. physics program at North Texas State University.

Research Associates and Visitors

Zhibin Lin, 2008-2009; research position at Renewable Energy Materials Research Science and Engineering Center, and Department of Physics, Colorado School of Mines
Xiang Zhou, 2008-2009; returned to faculty position at Wuhan University
Petra Sauer, 2004-2007; instructor at Bard High School Early College in New York City.
Robert Murawski, 2004-2005; afterward research associate with Marlan Scully group.
Yusheng Dou, 2001-2004; assistant professor, Nicholls State University.
Jan Gryko, 1989-1993; research position at Arizona State University (followed by assistant professor at College of Eastern Utah).
Zhi-Hong Huang, 1989-1990; research positions at University of Toledo and Penn State University.
Sydney Davison, 1987-88; on sabbatical from University of Waterloo.
Kelin Wang, 1985; on leave from University of Science and Technology of China.
Czeslaw Jedrzejek, 1984-present; on sabbatical and frequent visits from Jagellonian University, Cracow.
Madhu Menon, 1984-90; research position at University of Kentucky.
Terry Humphreys, 1983-84; E-Systems, Dallas.
Anil Kumar, 1983-84; assistant professor of physics, Prairie View A&M (followed by associate professor and professor).

Some Substantial Undergraduate Research

Clarence Annett, 1973; entered graduate program in physics at Ohio State.
Shelley Shumway, 1986; received NSF fellowship, and Ph.D. in physics from Cornell University; research associate at Argonne National Laboratory and University of Washington.
Kent Wade, 1987; received M.S. in physics from University of Illinois, and entered Ph.D. program in materials research at University of Wisconsin.
Zorawar Wadiasingh, 2004-2006; received Ph.D. in physics at Rice University. (Received Goldwater Scholarship in 2005.)

For more recent undergraduate research, see papers 238, 249, and 251.

A project last summer is expected to produce a paper -- Ross Tagaras, Ayman Abdullah-Smoot, Michelle Gohlke, David Lujan, James Sharp – simple model for ultrafast phase transitions, as presented in a talk by Ross Tagaras: “Phase transitions in advanced materials responding to ultrafast laser pulses: review of some experiments and a new theoretical approach” 2016 Joint Meeting of the Four Corners and Texas Sections of the American Physical Society, Las Cruces, New Mexico.

Courses Taught

Physics 689, Concepts of Modern Theoretical Physics
Physics 689, High-Temperature Superconductivity
Physics 689, Theory of Advanced Materials
Physics 689, Special Topics in Condensed Matter Physics
Physics 659 and 660, History of Physics
Physics 634, Quantum III b (relativistic quantum field theory)
Physics 633, Quantum III a (advanced quantum mechanics)
Physics 627, Elementary Particle Physics
Physics 624, Quantum II (second graduate course in quantum mechanics)
Physics 606, Quantum I (first graduate course in quantum mechanics)
Physics 617, Solid State Physics
Physics 607, Statistical Mechanics
Physics 603, Classical Electrodynamics
Physics 601, Classical Mechanics
Physics 489, Modern Astrophysics
Physics 489, Renaissance Astronomy (in Italy)
Lib. Arts 489. University Scholars Mentor Group
Physics 424, Solid State Physics
Physics 408, Thermodynamics and Statistical Mechanics
Physics 401, Computational Physics
Physics 314, Survey of Astronomy
Physics 306, Basic Astronomy
Physics 304, Advanced Electricity and Magnetism
Physics 302, Advanced Mechanics
Physics 222, Modern Physics for Engineers
Physics 221, Optics and Thermal Physics
Physics 208, Electricity, Magnetism, and Optics
Physics 218, Mechanics
Physics 202, College Physics
Physics 201, College Physics
Physics 101, Topics in Contemporary Physics

Service on Some Committees

Departmental Awards Committee (Chair, 2015-present)
Arnowitt Award Committee (Chair, 2017-present)
College of Science Tenure and Promotion Advisory Committee (2010-2012)
Promotions, Tenure, and Appointments Committee (Chair, 2008 & 2009)
Performance Evaluation Committee (Chair, 2008)
Hyer Award Committee, Texas Section of American Physical Society (Chair, 2008)
New Mitchell Physics Buildings Committee (appointed)
Executive Committee (elected)
College of Science Faculty Advisory Committee (Chair)
Executive Committee, Texas Section of American Physical Society (elected)
Astronomy Committee (Chair)
Distinguished Lecture Series and Colloquium Committee (Chair)

Department Brochure Committee (Chair)
Ph. D. Qualifying Exam Committee (Chair)
Search Committees in Astronomy, High Energy Experiment and Theory, Condensed Matter Experiment and Theory, Quantum Optics Experiment and Theory, Nuclear Experiment
TAMU Sigma Xi Awards Committee (Chair)
Faculty Senate Research Committee (elected)
College of Science alternate for Council of Principal Investigators (elected)
University Tenure Mediation Committee (elected)
University Faculty Development Leave Committee (elected)
University Professor Emeritus Committee (appointed)

Publications

[Journal articles are refereed; papers in conference proceedings and other books are not. Editorials are listed but not numbered.]

1. R. E. Allen and F. W. de Wette, "Calculation of Dynamical Surface Properties of Noble Gas Crystals. I. The Quasiharmonic Approximation," *Phys. Rev.* 179, 873 (1969).
2. R. E. Allen, F. W. de Wette, and A. Rahman, "Calculation of Dynamical Surface Properties of Noble Gas Crystals. II. Molecular Dynamics," *Phys. Rev.* 179, 887 (1969).
3. F. W. de Wette and R. E. Allen, "Calculation of Mean-Square Amplitudes and Thermal Diffuse Scattering for Surfaces of Noble Gas Crystals," in *The Structure and Chemistry of Solid Surfaces*, ed. by G. A. Somorjai (John Wiley & Sons, Inc., N.Y., 1969), p. 18-1.
4. F. W. de Wette, R. E. Allen, D. S. Hughes, and A. Rahman, "Crystallization with a Lennard-Jones Potential: A Computer Experiment," *Phys. Lett.* 29A, 548 (1969).
5. F. W. de Wette and R. E. Allen, "Structure and Dynamics of Very Thin Films," *Phys. Rev.* 187, 878 (1969).
6. R. E. Allen and F. W. de Wette, "Phonon Frequencies and Superconductivity in Very Thin Films," *Phys. Rev.* 187, 883 (1969).
7. R. E. Allen and F. W. de Wette, "Mean-Square Amplitudes of Vibration at a Surface," *Phys. Rev.* 188, 1320 (1969).
8. R. E. Allen and F. W. de Wette, "Surface Thermodynamic Functions for Noble Gas Crystals," *J. Chem. Phys.* 51, 4820 (1969).
9. R. E. Allen, G. P. Alldredge, and F. W. de Wette, "Surface Modes of Vibration in Monatomic Crystals," *Phys. Rev. Lett.* 23, 1285 (1969).
10. R. E. Allen, G. P. Alldredge, and F. W. de Wette, "Surface Modes Within the Bulk Continua," *Phys. Rev. Lett.* 24, 301 (1970).
11. R. E. Allen, G. P. Alldredge, and F. W. de Wette, "Lattice Vibrations and Superconductivity in Layered Structures," *Phys. Rev. B* 2, 2570 (1970).
12. T. S. Chen, R. E. Allen, G. P. Alldredge, and F. W. de Wette, "Surface Modes of Vibration in an Ionic Crystal," *Solid State Commun.* 8, 2105 (1970).
13. G. P. Alldredge, R. E. Allen, and F. W. de Wette "Character of Surface and Pseudo-Surface Waves in a Discrete Lattice," *Journal of Acoustical Society of America* 49, 1453 (1971).
14. R. E. Allen, G. P. Alldredge, and F. W. de Wette, "Thermodynamic Functions and Debye-Waller Factor for Adsorbed Particles," *J. Chem. Phys.* 54, 2605 (1971).
15. R. E. Allen, "Comment on the Scattering-Matrix Method for Determining Defect Modes," *Phys. Rev. B* 3, 3580 (1971).

16. R. E. Allen, "Remarks on the Everett-Wheeler Interpretation of Quantum Mechanics," *Am. J. Phys.* 39, 842 (1971).
17. R. E. Allen, G. P. Alldredge, and F. W. de Wette, "Studies of Vibrational Surface Modes. I. General Formulation," *Phys. Rev. B* 4, 1648 (1971).
18. R. E. Allen, G. P. Alldredge, and F. W. de Wette, "Studies of Vibrational Surface Modes. II. Monatomic fcc Crystals," *Phys. Rev. B* 4, 1661 (1971).
19. G. P. Alldredge, R. E. Allen, and F. W. de Wette, "Studies of Vibrational Surface Modes. III. Effect of an Absorbed Layer," *Phys. Rev. B* 4, 1682 (1971).
20. T. S. Chen, G. P. Alldredge, F. W. de Wette, and R. E. Allen, "Surface Thermodynamic Functions for NaCl," *J. Chem. Phys.* 55, 3121 (1971).
21. T. S. Chen, G. P. Alldredge, F. W. de Wette, and R. E. Allen, "Surface and Pseudo-Surface Modes in Ionic Crystals," *Phys. Rev. Lett.* 26, 1543 (1971).
22. F. W. de Wette, G. P. Alldredge, T. S. Chen, and R. E. Allen, "Lattice-Dynamical Studies of Surface Modes," *Phonons*, edited by M. A. Nusimovici (Flammarion, Paris, 1971), p. 395.
23. F. W. de Wette and R. E. Allen, "Anharmonicity at Surfaces," *Phonons*, edited by M. A. Nusimovici (Flammarion, Paris, 1971), p. 488.
24. R. E. Allen, "Thermal Expansion at a Surface," *J. Vac. Sci. Technol.* 9, 934 (1972).
25. V. E. Kenner, R. E. Allen, and W. M. Saslow, "Screening of External Fields and Distribution of Excess Charge Near a Metal Surface," *Phys. Lett.* 38A, 255 (1972).
26. T. S. Chen, G. P. Alldredge, F. W. de Wette, and R. E. Allen, "Surface Mean-Square Amplitudes of Vibration for NaCl," *Phys. Rev. B* 6, 623 (1972).
27. T. S. Chen, G. P. Alldredge, F. W. de Wette, and R. E. Allen, "Surface Modes of Vibration in the Rigid-Ion Model of NaCl," *Phys. Rev. B* 6, 627 (1972).
28. R. E. Allen, G. P. Alldredge, and F. W. de Wette, "Surface Vibrations in a Model hcp Crystal," *Phys. Rev. B* 6, 632 (1972).
29. L. L. Kesmodel, F. W. de Wette, and R. E. Allen, "One-Photon Thermal-Diffuse Scattering from Xe(111)," *Solid State Commun.* 11, 145 (1972).
30. V. E. Kenner and R. E. Allen, "High-T Coefficients of Thermal Expansion Near a Surface," *Phys. Lett.* 39A, 245 (1972).
31. L. L. Kesmodel, F. W. de Wette, and R. E. Allen, "Thermal Diffuse Scattering of Low-Energy Electrons from Xe," *Phys. Rev. B* 7, 802 (1973).
32. D. G. Naugle, J. W. Baker, and R. E. Allen, "Evidence for a Surface-Phonon Contribution to Thin-Film Superconductivity: Depression of T_c by Noble Gas Overlayers," *Phys. Rev. B* 7, 3028 (1973).

33. V. E. Kenner, R. E. Allen, and W. M. Saslow, "Screening and Tunneling at Metal Surfaces," *Phys. Rev. B* 8, 576 (1973).
34. V. E. Kenner and R. E. Allen, "Calculations of Surface Thermal Expansion," *Phys. Rev. B* 8, 2916 (1973).
35. V. E. Kenner and R. E. Allen, "Surface Thermal Expansion in Noble Gas Solids," *Low Temperature Physics-LT 13*, edited by K. D. Timmerhaus, W. J. O'Sullivan, and E. F. Hammel (Plenum Press, N.Y., 1974), Vol. 2, p. 245.
36. D. G. Naugle, J. W. Baker, and R. E. Allen, "Modification of Surface Mode Frequencies and Superconductivity T_c by Adsorbed Layers," *Low Temperature Physics-LT 13*, edited by K. D. Timmerhaus, W. J. O'Sullivan, and E. F. Hammel (Plenum Press, N.Y., 1974), Vol. 3, p. 537.
37. C. Arnett, W. R. Lawrence, and R. E. Allen, "Temperature Dependence and Stability of Surface Structures," *Phys. Rev. B* 10, 4184 (1974).
38. V. E. Kenner and R. E. Allen, "Surface Contribution to Electronic Density of States, Heat Capacity, and Spin Susceptibility," *Phys. Rev. B* 11, 2858 (1975).
39. R. E. Allen, "Surface Contribution to a General Physical Quantity," *Solid State Commun.* 16, 1143 (1975).
40. R. E. Allen, "Surface Correction to Landau Diamagnetism," *Phys. Rev. B* 12, 2869 (1975).
41. R. E. Allen, "Superconducting Transition Temperature and Other Properties of Thin Metallic Films," *Phys. Rev. B* 12, 3650 (1975).
42. D. G. Naugle and R. E. Allen, "Simple Model for Surface Specific Heats," *J. Chem. Phys.* 63, 991 (1975).
43. W. R. Lawrence and R. E. Allen, "Specific Heats and Adsorption for Noble Gas Overlayers," *Low Temperature Physics-LT 14*, ed. M. Krusius and M. Vuorio (North Holland, N.Y., 1975), Vol. 4, p. 441.
44. R. E. Allen, "Structural Phase Transitions in Solids with Applied Stresses and Fields, and Effect of Isotopic Impurities on the Free Energy," *J. Chem. Phys.* 64, 552 (1976).
45. R. W. Hardy and R. E. Allen, "Surface States in Li and Na," *Solid State Commun.* 19, 1 (1976).
46. W. R. Lawrence and R. E. Allen, "Calculations of Heat Capacities of Adsorbates," *Phys. Rev. B* 14, 2910 (1976).
47. R. W. Hardy and R. E. Allen, "Electronic Structure of Alkali Metal Surfaces," *Surf. Sci.* 61, 177 (1976).
48. W. R. Lawrence and R. E. Allen, "Vibrational Modes of Adsorbed Atoms," *Phys. Rev. B* 15, 5081 (1977).
49. R. E. Allen, "A General Green Function Method for Calculating Electronic Structure and Vibrational Modes at Surfaces," *Surf. Sci.* 76, 91 (1978).

50. R. E. Allen, "Green's Functions and Generalized Phase Shift for Surface and Interface Problems," *Phys. Rev. B* 19, 917 (1979).
51. R. E. Allen, "Green's Functions for Surface Physics," *Phys. Rev. B* 20, 1454 (1979).
52. H. P. Hjalmarson, R. E. Allen, H. Buttner, and J. D. Dow, "Theory of Deep Substitutional sp³-bonded Impurity Levels and Core Excitons at Semiconductor Interfaces," *J. Vac. Sci. Technol.* 17, 993 (1980).
53. R. E. Allen, H. P. Hjalmarson, H. Büttner, P. Vogl, D. J. Wolford, O. F. Sankey, and J. D. Dow, "Theory of Core Exciton Binding Energies for Excitons Near Interfaces," *Intern. J. Quan. Chem. Symp.* 14, 607 (1980).
54. J. D. Dow, H. P. Hjalmarson, O. F. Sankey, R. E. Allen, and H. Büttner, "Theory of Core Excitons," *Inner Shell and X-ray Physics of Atoms and Solids*, ed. by D. J. Fabian, H. Kleinpoppen and L. M. Watson (Plenum Press, New York, 1981), p. 789.
55. J. D. Dow, H. P. Hjalmarson, H. Büttner, O. F. Sankey, and R. E. Allen, "A Chemical Theory of Core Excitons in Semiconductors," VI International Conference on Vacuum Ultraviolet Radiation Physics (R. C. Elton, Code 6505, U.S. Naval Research Laboratory, Washington I), p.99 (1980).
56. R. E. Allen and J. D. Dow, "Theory of Frenkel Core Excitons at Semiconductor Surfaces," *Phys. Rev. B* 24, 911 (1981).
57. R. E. Allen and J. D. Dow, "Unified Theory of Point-Defect Electronic States, Core Excitons, and Intrinsic Electronic States at Semiconductor Surfaces," *J. Vac. Sci. Technol.* 19, 383 (1981).
58. J. D. Dow, R. E. Allen, O. F. Sankey, J. P. Buisson, and H. P. Hjalmarson, "Effects of the Environment on Point-Defect Energy Levels in Semiconductors," *J. Vac. Sci. Technol.* 19, 502 (1981).
59. R. E. Allen and J. D. Dow, "Role of Surface Antisite Defects in the Formation of Schottky Barriers," *Phys. Rev. B* 25, 1423 (1982).
60. S.-Y. Ren, R. E. Allen, J. D. Dow, and I. Lefkowitz, "Theory of Deep Impurity Levels in CuCl," *Phys. Rev. B* 25, 1205 (1982).
61. O. F. Sankey, R. E. Allen, and J. D. Dow, "Effects of the Environment on Frenkel Core Exciton Energies," *Intern. J. Quan. Chem. Symp.* 15, 469 (1981).
62. R. E. Allen, H. P. Hjalmarson, and J. D. Dow, "Surface Electronic States in GaAs_{1-x}P_x," *Surf. Sci.* 110, L625 (1981).
63. J. P. Buisson, R. E. Allen, and J. D. Dow, "Theorie des niveaux pro fonds de lacunes dans InGaAsP," *J. de Physique* 43, 181 (1982).
64. R. E. Allen, J. P. Buisson, and J. D. Dow, "Theory of Deep Traps at Semiconductor Interfaces," *Appl. Phys. Lett.* 39, 975 (1981).
65. J. D. Dow and R. E. Allen, "Surface Defects and Fermi-Level Pinning in InP," *J. Vac. Sci. Technol.* 20, 659 (1982).

66. R. E. Allen, H. P. Hjalmarson and J. D. Dow, "Electronic Energy Levels of Point Defects at the GaSb (110) Surface," *Solid State Commun.* 41, 419 (1982).
67. R. E. Allen and J. D. Dow, "Deep Energy Levels for Defects at the AlAs (110) Surface," *Appl. Surf. Sci.* 11/12, 362 (1982).
68. R. P. Beres, R. E. Allen, and J. D. Dow, "Importance of Resonances in Surface-Electronic-State Spectroscopy: (110) Surfaces of ZnSe and ZnTe," *Phys. Rev. B* 26, 769 (1982).
69. R. P. Beres, R. E. Allen, J. P. Buisson, G. W. Blackwell, M. A. Bowen, H. P. Hjalmarson, and J. D. Dow, "Bound and Resonant Surface States at the (110) Surfaces of AlAs, AlAs, and AlP," *J. Vac. Sci. Technol.* 21, 548 (1982).
70. R. P. Beres, R. E. Allen, and J. D. Dow, "Surface States and Surface Resonances in InP, InAs, and InSb," *Phys. Rev. B* 26, 5702 (1982).
71. J. P. Buisson, R. E. Allen, and J. D. Dow, "Antisite Defects in InGaAsP," *Solid State Commun.* 43, 833 (1982).
72. J. P. Buisson, J. D. Dow, and R. E. Allen, "Electronic States of the (111) (2x1) and (1x1) Surfaces of Ge, Si, Diamond, and Ge on Si," *Surf. Sci.* 120, L477 (1982).
73. A. D. Katnani, G. Margaritondo, R. E. Allen, and J. D. Dow, "Role of Surface Antisite Defects in the Formation of Heterojunctions," *Solid State Commun.* 44, 1231 (1982).
74. M. A. Bowen, J. D. Dow, and R. E. Allen, "Si (100) Surface States: A Success for the (2x1) Asymmetric Dimer Model," *Phys. Rev. B* 26, 7083 (1982).
75. J. D. Dow and R. E. Allen, "Role of Dangling Bonds and Antisite Defects in Rapid and Gradual III-V Laser Degradation," *Appl. Phys. Letters* 41, 672 (1982).
76. J. P. Buisson, M. P. Kykta, J. D. Dow, R. P. Beres, and R. E. Allen, "Intrinsic Interface States as Extended Deep Traps: Si/GaP and Ge/GaP," *J. Appl. Phys.* 54, 4221 (1983).
77. R. P. Beres, R. E. Allen, and J. D. Dow, "Bound and Resonant (110) Surface Electronic States for GaAs, GaP, and GaSb," *Solid State Commun.* 45, 13 (1983).
78. R. E. Allen and J. D. Dow, "Theory of GaAs/Oxide Interface States," *Solid State Commun.* 45, 379 (1983).
79. M. A. Bowen, A. C. Redfield, D. V. Froelich, K. E. Newman, R. E. Allen, and J. D. Dow, "Effects of an Order-Disorder Transition on Surface Deep Levels in Metastable GaAsGe," *J. Vac. Sci. Technol. B* 1, 747 (1983).
80. R. E. Allen, R. P. Beres, and J. D. Dow, "Fermi-Level Pinning at Heterojunctions," *J. Vac. Sci. Technol. B* 1, 401 (1983).
81. C. P. Marsh, J. D. Dow, and R. E. Allen, "Hjalmarson-Frenkel Core Excitonic Resonances at III-V Semiconductor Surfaces," *Phys. Rev. B* 28, 957 (1983).

82. O. F. Sankey, R. E. Allen, and J. D. Dow, "Si/Transition-Metal Schottky Barriers: Fermi-Level Pinning by Dangling Bonds at Interfacial Vacancies," *Solid State Commun.* 49, 1 (1984).
83. M. A. Bowen, R. E. Allen, and J. D. Dow, "Surface Defects and Core Excitons at the (2x1) Asymmetric-Dimer (100) Surface of Si," *Phys. Rev. B* 30, 4617 (1984).
84. J. D. Dow, R. E. Allen, and O. F. Sankey, "Intrinsic and Extrinsic Surface Electronic States of Semiconductors," in *Chemistry and Physics of Solid Surfaces V*, edited by R. Vanselow and R. Howe (Springer-Verlag, New York, 1984), p. 483.
85. O. F. Sankey, R. E. Allen, and J. D. Dow, "Theory of Si/Transition-Metal-Silicide Schottky Barriers," *J. Ultramicroscopy* 14, 127 (1984).
86. R. E. Allen, T. J. Humphreys, J. D. Dow, and O. F. Sankey, "Theory of Surface-Defect States and Schottky Barrier Heights: Application to InAs," *J. Vac. Sci. Technol. B* 2, 449 (1984).
87. O. F. Sankey, R. E. Allen, and J. D. Dow, "Theory of Schottky Barrier Formation for Transition Metals on Si, Ge, Diamond, and SiGe Alloys," *J. Vac. Sci. Technol. B* 2, 491 (1984).
88. S.-F. Ren and R. E. Allen, "Defect Complexes and Schottky Barriers," *Surf. Sci.* 148, L637 (1984).
89. O. F. Sankey, R. E. Allen, and J. D. Dow, "Theory of Schottky Barriers for III-V and Group IV Semiconductors," *Proceedings of the 17th International Conference on the Physics of Semiconductors*, edited by J. D. Chadi and W. A. Harrison (Springer-Verlag, New York, 1985), p. 189.
90. J. D. Dow, O. F. Sankey, and R. E. Allen, "Interfacial Deep Levels Responsible for Schottky Barrier Formation at Semiconductor/Metal Contacts," *Applications of Surface Science* 22/23, 937 (1985).
91. J. D. Dow, O. F. Sankey, and R. E. Allen, "Chemical Trends of Schottky Barriers," *Materials Science Forum* 4, 39 (1985).
92. D. V. Froelich, M. E. Lapeyre, J. D. Dow, and R. E. Allen, "Dependence of the GaAs (110) Surface Electronic State Dispersion Curves on the Surface Relaxation Angle," *Superlattices and Microstructures* 1, 87 (1985).
93. O. F. Sankey, R. E. Allen, S.-F. Ren, and J. D. Dow, "Dangling Bonds and Schottky Barriers," *J. Vac. Sci. Technol. B* 3, 1221 (1985).
94. H. Lim and R. E. Allen, "Theory of Si/NiSi₂ Interface States," *J. Vac. Sci. Technol. B* 3, 1221 (1985).
95. R. E. Allen, O. F. Sankey, and J. D. Dow, "Theoretical Interpretation of Schottky Barriers and Ohmic Contacts," *Surf. Sci.* 168, 376 (1986).
96. S. L. Shumway and R. E. Allen, "Computer Simulations of Atom/Surface Interactions," *Proceedings of the 1985 Summer Computer Simulation Conference*, edited by the Society for Computer Simulation (North Holland, Amsterdam, 1985).
97. M. Menon and R. E. Allen, "New Technique for Molecular Dynamics Computer Simulations: Hellmann-Feynman Theorem and Subspace Hamiltonian (Green's Function) Approach," *Proceedings of the 1985*

Summer Computer Simulation Conference, edited by the Society for Computer Simulation (North Holland, Amsterdam, 1985).

98. O. F. Sankey and R. E. Allen, "Molecular Dynamics for Covalently Bonded Systems: Application to Semiconductor (110) Surface Relaxation," Proceedings of the 1985 Summer Computer Simulation Conference, edited by the Society for Computer Simulation (North Holland, Amsterdam, 1985).

99. M. Szklarczyk and R. E. Allen, "Interpretation of Quantum Yields Exceeding Unity in Photoelectrochemistry," *Appl. Phys. Lett.* 49, 1028 (1986).

100. R. E. Allen and M. Menon, "Subspace Hamiltonian Technique," *Phys. Rev. B* 33, 5611 (1986).

101. M. Menon and R. E. Allen, "New Technique for Molecular Dynamics Computer Simulations: Hellmann-Feynman Theorem and Subspace Hamiltonian Approach," *Phys. Rev. B* 33, 7099 (1986).

102. S. L. Shumway and R. E. Allen, "Dynamics of Adsorption, Exchange Reactions, and Defect Formation at Solid Surfaces," *Surf. Sci.* 177, L999 (1986).

103. O. F. Sankey and R. E. Allen, "Atomic Forces from Electronic Energies via the Hellmann-Feynman Theorem, with Application to Semiconductor (110) Surface Relaxation," *Phys. Rev. B* 33, 7164 (1986).

104. H. Lim and R. E. Allen, "Intrinsic Interface States and Defect States for Si/NiSi₂ (111)," *J. Vac. Sci. Technol. A* 4, 2328 (1986).

105. S.-F. Ren and R. E. Allen, "Theory of Defect Complexes at Semiconductor Surfaces," *Solid State Commun.* 64, 589 (1987).

106. C. W. Myles, S.-F. Ren, R. E. Allen, and S.-Y. Ren, "Effects of Alloy Disorder on Schottky Barrier Heights," *Phys. Rev. B* 35, 9758 (1987).

107. M. Menon and R. E. Allen, "Simulation of Chemisorption on a Semiconductor Surface," *Superlattices and Microstructures* 3, 295 (1987).

108. M. Menon and R. E. Allen, "Time-Dependent Chemisorption on a Semiconductor Surface," *Solid State Commun.* 64, 353 (1987).

109. B. A. Richert and R. E. Allen, "Effect of Oxygen Vacancies on the Electronic Structure of LaMCuO₄," Proceedings of the 18th International Conference on Low Temperature Physics, Part II, edited by Y. Nagaoka; *Jpn. J. of Appl. Phys. Suppl.* 26-3, 989 (1987).

110. B. A. Richert and R. E. Allen, "LaO or BaO Excitons as the Mechanism of High Temperature Superconductivity," Proceedings of the 18th International Conference on Low Temperature Physics, Part III; *Jpn. J. of Appl. Phys. Suppl.* 26-3, 2047 (1987).

111. B. A. Richert and R. E. Allen, "Metal-Oxygen Charge-Transfer Excitons and High-T_c Superconductivity," Proceedings of the Drexel International Conference on High-Temperature Superconductivity, edited by S. M. Bose and S. D. Tyagi (World Scientific, Singapore, 1987), p. 149; also in *Reviews of Solid Science* 1, 295 (1987).

112. M. Menon and R. E. Allen, "Computer Simulations of Chemisorption," *Progress in Surface Science* 25, 317 (1987).
113. M. Menon and R. E. Allen, "Dynamics of Chemisorption and Indiffusion at Semiconductor Surfaces," *Surf. Sci.* 197, L237 (1988).
114. M. Menon and R. E. Allen, "Simulations of Atomic Processes at Semiconductor Surfaces: General Method and Chemisorption on GaAs (110)," *Phys. Rev. B* 38, 6196 (1988).
115. M. Menon and R. E. Allen, "Indiffusion and Chemisorption of B, C, and N on GaAs and InP," in *The Structure of Surfaces II*, edited by J. F. van der Veen and M. A. Van Hove (Springer-Verlag, Berlin, 1988), p. 399.
116. M. Menon and R. E. Allen, "Molecular Dynamics Studies of Chemical Reactions at Semiconductor Surfaces," *Superlattices and Microstructures* 4, 629 (1988).
117. M. Menon and R. E. Allen, "Multiple Initial Chemisorption Sites: Al on GaAs (110)," *J. Vac. Sci. Technol. A* 6, 1491 (1988).
118. R. P. Beres, R. E. Allen, and J. D. Dow, "Effects of the Band Offset on Interfacial Deep Levels," *J. Materials Research* 3, 164 (1988).
119. B. A. Richert and R. E. Allen, "Atomic Substitution in YBa₂Cu₃O₇: Modification of the Electronic Structure," in *Thin Film Processing and Characterization of High-Tc Superconductors*, edited by J. M. E. Harper, R. J. Colton, and L. C. Feldman, AIP Conference Series No. 165 (A.I.P., New York, 1988), p. 277.
120. B. A. Richert and R. E. Allen, "Theoretical Studies of Oxygen Vacancies in YBa₂Cu₃O₇," in *High Temperature Superconductors*, edited by M. B. Brodsky, R. C. Dynes, K. Kitazawa, and H. L. Fuller; *Mat. Res. Soc. Symp. Proc.* 99, 463 (1988).
121. B. A. Richert and R. E. Allen, "Electronic Structure of High Temperature Superconductors," *Phys. Rev. B* 37, 7869 (1988).
122. B. A. Richert and R. E. Allen, "Atomic Substitutions in YBa₂Cu₃O₇: Modification of the Electronic Structure," *Phys. Rev. B* 37, 7496 (1988).
123. B. A. Richert and R. E. Allen, "Oxygen and Lanthanum Vacancies in LaSrCuO: Modification of the Electronic Structure," *Proceedings of the World Congress on Superconductivity*, edited by C. G. Burnham and R. Kane (World Scientific, Singapore, 1988), p. 485.
124. M. Menon and R. E. Allen, "Reaction of Dimers and Diatomic Molecules with GaAs (110): Molecular Dynamics Computer Simulations," *J. Vac. Sci. Technol. B* 6, 1302 (1988).
125. B. A. Richert and R. E. Allen, "Electronic Structure and Mechanism of Superconductivity in BaKBiO," *Proceedings of the 19th International Conference on the Physics of Semiconductors*, edited by W. Zawadzki (Institute of Physics, Polish Academy of Sciences, Warsaw, 1988), p. 1741.
126. M. Menon and R. E. Allen, "Simulations of Atoms and Molecules Reacting with Semiconductor Surfaces," *Proceedings of the 19th International Conference on the Physics of Semiconductors*, edited by W. Zawadzki (Institute of Physics, Polish Academy of Sciences, Warsaw, 1988), p. 749.

127. B. Stepien, C. Jedrzejek, and R. E. Allen, "Dangling Bond Resonances and Intrinsic Schottky Barriers," *Solid State Commun.* 69, 647 (1989).
128. B. A. Richert and R. E. Allen, "LaO/BaO/SrO Excitons as the Mechanism of High-Temperature Superconductivity", *Solid State Commun.* 69, 539 (1989).
129. B. A. Richert and R. E. Allen, "Tight-Binding Description of High-Temperature Superconductors," in *High-Tc Superconducting Thin Films, Devices, and Applications*, edited by G. Margaritondo, R. Joynt, and M. Onellion, A.I.P. Conference Series No. 182 (A.I.P., New York, 1989) p. 410.
130. M. Menon and R. E. Allen, "Reaction of Au₄ and Ga(CH₃)₃ with GaAs (110)," *J. Vac. Sci. Technol. A* 7, 790 (1989).
131. M. Menon and R. E. Allen, "Simulation of Atomic and Molecular Processes at Solid Surfaces," in *Atomistic Simulation of Materials*, edited by V. Vitek and D. J. Srolovitz (Plenum, 1989), p. 425.
132. M. Menon and R. E. Allen, "Simulations of Metalorganic Chemical Vapor Deposition and of Cluster Formation on GaAs," *J. Vac. Sci. Technol. B* 7, 729 (1989).
133. B. A. Richert and R. E. Allen, "Tight-Binding Description of High-Temperature Superconductors," *J. Phys. Cond. Mat.* 1, 9443 (1989).
134. B. A. Richert and R. E. Allen, "Vacancies as Dopants in High-Temperature Superconductors," *J. Phys. Cond. Mat.* 1, 9451 (1989).
135. B. A. Richert, E. Schachinger, and R. E. Allen, "The Little Mechanism: A Consistent Interpretation of High-Temperature Superconductivity", *Physica C* 162-164, 1443 (1989).
136. B. A. Richert, E. Schachinger, and R. E. Allen, "Pairing Interaction for Sandwich Excitons," in *High Tc Superconducting Thin Films: Processing, Characterization, and Applications*, edited by R. L. Stockbauer, S. V. Krishnaswamy, and R. L. Kurtz (AIP Conference Proceedings No. 200, 1990), p. 16.
137. B. A. Richert, E. Schachinger, and R. E. Allen, "Sandwich Excitons as the Mechanism of High-Tc Superconductivity," *Mat. Res. Soc. Symp. Proc.* 169, 33 (1990).
138. M. Menon and R. E. Allen, "Electronic States of Sb, Bi, Au, and Sn Clusters on GaAs (110)," *J. Vac. Sci. Technol. B* 8, 900 (1990).
139. J. Gryko and R. E. Allen, "Dynamics of Relaxation and Reconstruction at Semiconductor Surfaces," in *Integral Methods in Science and Engineering - 90*, edited by A. Haji-Sheikh (Hemisphere Publishing, Washington, D.C., 1990), p. 574.
140. Z.-H. Huang and R. E. Allen, "Calculations of Optical Properties of High-Temperature Superconductors," *Physica C* 173, 173 (1991).
141. Z.-H. Huang, J. Gryko, and R. E. Allen, "Kinetics and Dynamics on Si(100)," *J. Vac. Sci. Technol. B* 9, 685 (1991).

142. M. Menon and R. E. Allen, "Subsurface Chemisorption of Small Atoms on Semiconductors: B, C, and N on GaAs," *J. Vac. Sci. Technol. B* 9, 761 (1991).
143. P. K. Das and R. E. Allen, "Surface Phonons of GaAs and InP," *Proceedings of the 20th International Conference on the Physics of Semiconductors*, edited by E. M. Anastassakis and J. D. Joannopoulos (World Scientific, Singapore, 1990), p. 1473.
144. J. Gryko and R. E. Allen, "Dynamics and Energetics of Reconstruction at Semiconductor Surfaces," *Proceedings of the 20th International Conference on the Physics of Semiconductors*, edited by E. M. Anastassakis and J. D. Joannopoulos (World Scientific, Singapore, 1990), p. 179.
145. M. Menon and R. E. Allen, "Electronic States Around and Within the Bandgap for Clusters on GaAs," *Superlattices and Microstructures* 8, 387 (1990).
146. Z.-H. Huang and R. E. Allen, "Diffusion of Si Atoms and Dimers on Si (100)," *J. Vac. Sci. Technol. A* 9, 876 (1991).
147. J. Gryko and R. E. Allen, "Dimerization and Adsorption of Si on the Si (100) Surface," *J. Vac. Sci. Technol. A* 9, 656 (1991).
148. M. Menon and R. E. Allen, "Dynamics of Subsurface and Surface Chemisorption for B, C, and N on GaAs and InP," *Phys. Rev. B* 44, 11293 (1991).
149. Z.-H. Huang, M. Weimer and R. E. Allen, "The Image Potential in Scanning Tunneling Microscopy of Semiconductor Surfaces," *J. Vac. Sci. Technol. B* 9, 2399 (1991).
150. J. Gryko and R. E. Allen, "Dimer Switching on Si(100)," *Ultramicroscopy* 42-44, 793 (1992).
151. Z.-H. Huang and R. E. Allen, "Influence of STM Tip on Electronic Structure: Si(100) Dimers," *Ultramicroscopy* 42-44, 97 (1992).
152. Z.-H. Huang, M. Weimer, and R. E. Allen, "Internal Image Potential in Semiconductors: Effect on Scanning Tunneling Microscopy," *Phys. Rev. B* 48, 15068 (1993).
153. Z.-H. Huang, M. Weimer, R. E. Allen, and H. Lim, "Polarization of Electronic Charge and Distortion of Surface Geometry by a Scanning Tunneling Microscopy Tip: Si(100)," *J. Vac. Sci. Technol. A* 10, 974 (1992).
154. J. Gryko and R. E. Allen, "Energy Surface and Dynamics of Si(100)," *J. Vac. Sci. Technol. A* 10, 2052 (1992).
155. J. Gryko and R. E. Allen, "Ground-State Structure of Si(100)," in *The Physics of Semiconductors*, edited by P. Jiang and H.-Z. Zheng (World Scientific, Singapore, 1992), p. 433.
156. J. Gryko and R. E. Allen, "As₄ to 2As₂ on Si(100) at 900 K: Molecular Dynamics Simulations of Dissociative Chemisorption," in *The Physics of Semiconductors*, edited by P. Jiang and H.-Z. Zheng (World Scientific, Singapore, 1992), p. 602.

157. H. Lim, Z.-H. Huang, M. Penubothu, and R. E. Allen, "Chemical and Coulomb Forces in Atomic Manipulation," in *The Physics of Semiconductors*, edited by P. Jiang and H.-Z. Zheng (World Scientific, Singapore, 1992), p. 369.
158. R. E. Allen and B. A. Richert, "Band Structures of TBCCO Materials," in *Thallium-Based High-Temperature Superconductors*, edited by A. M. Hermann and J. V. Yakhmi (Marcel Dekker, New York, 1994), p. 579.
159. J. Gryko and R. E. Allen, "Stringlike Chemisorption and Rapid Dissociation of As₄ and Sb₄ on Si(100)," in *Evolution of Surface and Thin Film Microstructure*, edited by H. A. Atwater, E. Chason, M. H. Grabow, and M. G. Lagally (Materials Research Society, Pittsburgh, 1993), p. 65.
160. J. Gryko and R. E. Allen, "Bond Rotations at the Si(100) Surface: Anharmonicity, Chaotic Dynamics, and Signature of Tilted-Dimer Reconstruction," in *Materials Theory and Modelling*, edited by J. Broughton, P. Bristowe, and J. Newsam (Materials Research Society, Pittsburgh, 1993), p. 111.
161. J. Gryko and R. E. Allen, "(2x1) to c(4x2) Transition at the Si(100) Surface: A First-Principles-Based Monte Carlo Study," *Physica B* 194-196, 381 (1994).
162. J. Gryko and R. E. Allen, "Binding Energies and Energy Barriers for Ni on Si(100)," in *Formation of Semiconductor Interfaces*, edited by B. Lengeler, H. Luth, W. Monch, and J. Pollmann (World Scientific, Singapore, 1994), p. 142.
163. J. Gryko and R. E. Allen, "Classical and Quantum Molecular Dynamics: Versatile Tools for Materials Science," in *High Performance Computing and Its Application in the Physical Sciences*, edited by D. A. Browne et al. (World Scientific, Singapore, 1994), p. 194.
164. G. Lengel, R. Wilkins, G. Brown, M. Weimer, J. Gryko, and R. E. Allen, "Geometry and Electronic Structure of the Arsenic Vacancy on GaAs(110)," *Phys. Rev. Letters* 72, 836 (1994).
165. J. S. Graves, R. E. Allen, and B. A. Richert, "Chemical and Structural Effects on the Electronic States of (Hg, Tl, Pb, Bi)-Based Cuprate Superconductors," *J. of Superconductivity* 7, 621 (1994).
166. G. Lengel, M. Weimer, J. Gryko, and R. E. Allen, "Interchain Vacancy Migration on GaAs(110)," *J. Vac. Sci. Technol. A* 12, 1855 (1994).
167. R. E. Allen, "Electron-Ion Dynamics: A Technique for Simulating Both Electronic Transitions and Ionic Motion in Molecules and Materials," *Phys. Rev. B* 50, 18629 (1994).
168. G. Lengel, R. Wilkins, M. Weimer, J. Gryko, and R. E. Allen, "Characterization of the Gallium Vacancy on GaAs(110)," in *The Physics of Semiconductors*, edited by D. J. Lockwood (World Scientific, Singapore, 1995), p. 479.
169. Q. Gao and R. E. Allen, "Model Self-Energy for Many-Body Corrections in Complex Materials," in *The Physics of Semiconductors*, edited by D. J. Lockwood (World Scientific, Singapore, 1995), p. 125.
170. G. Lengel, M. Weimer, J. Gryko, and R. E. Allen, "Carrier Capture as a Mechanism for Defect Migration at Semiconductor Surfaces," *J. Vac. Sci. Technol. B* 13, 1144 (1995).

171. Y. Liu and R. E. Allen, "Electronic Structure of the Semimetals Bi and Sb," *Phys. Rev. B* 52, 1566 (1995).
172. J. Harper, G. Lengel, R. E. Allen, and M. Weimer, "Comment on 'Structure of the As Vacancies on GaAs(110) Surfaces,'" *Physical Review Letters* 79, 3312 (1997).
173. J. Harper, G. Lengel, R. E. Allen, and M. Weimer, "Comment on 'Theoretical Scanning Tunneling Microscopy Images of the As Vacancy on the GaAs(110) Surface,'" *Physical Review Letters* 79, 3314 (1997).
174. R.E. Allen, "A Statistical Superfield and Its Observable Consequences", *International Journal of Modern Physics A* 12, 2385 (1997); hep-th/9612041.
175. J.S. Graves and R.E. Allen, "Tight-Binding Electron-Ion Dynamics: A Method for Treating Nonadiabatic Processes and Interactions with Electromagnetic Radiation," in *Tight-Binding Approach to Computational Materials Science*, edited by P.E.A. Turchi, A. Gonis, and L. Colombo (Materials Research Society, Warrendale, Pennsylvania, 1998), p. 371.
176. S. Khosravi and R.E. Allen, "Coupled Dynamics of Electrons and Nuclei in a Molecule Interacting with Ultrashort, Ultra-Intense Laser Pulses," in *Tight-Binding Approach to Computational Materials Science*, edited by P.E.A. Turchi, A. Gonis, and L. Colombo (Materials Research Society, Warrendale, Pennsylvania, 1998), p. 495.
177. J. S. Graves and R. E. Allen, "Response of GaAs to Fast Intense Laser Pulses", *Physical Review B* 58, 13627 (1998).
178. T. Dumitrica, J.S. Graves, and R.E. Allen, "Second-Order Susceptibility from a Tight-Binding Hamiltonian", *Physical Review B* 58, 15340 (1998).
179. B. Torralva and R. E. Allen, "Bond Softening and Breathing Mode Excitation in C60 Following an Ultrashort Laser Pulse", in the *Proceedings of the 24th International Conference on the Physics of Semiconductors* (Jerusalem, August, 1998).
180. J. Harper, R.E. Allen, M. Weimer, and G. Lengel, "Geometry Versus Electronic Effects in Scanning Tunneling Microscopy: The Arsenic Vacancy on GaAs(110)", in the *Proceedings of the 24th International Conference on the Physics of Semiconductors* (Jerusalem, August, 1998).
181. R.E. Allen, J. Dumoit, and A. Mondragon, "Observational Tests of Instanton Cosmology", in *Particles, Strings, and Cosmology*, edited by P. Nath (World Scientific, Singapore, 1999), p. 81; hep-th/9807141.
182. A. Mondragon and R.E. Allen, "Deceleration Parameter and Age of the Universe in Instanton Cosmology", in *Relativity, Particle Physics, and Cosmology: Proceedings of the Richard Arnowitt Fest*, edited by R.E. Allen (World Scientific, Singapore, 1999), p. 343; astro-ph/9803079.
183. R.E. Allen, "Four Testable Predictions of Instanton Cosmology", in *Cosmo-98, Second International Workshop on Particle Physics and the Early Universe*, edited by D.O. Caldwell (American Institute of Physics, Woodbury, New York, 1999), p. 204; astro-ph/9902042.
184. R.E. Allen, "Deviations from Lorentz Invariance for Ultrahigh-Energy Fermions", in *CPT and Lorentz Symmetry*, edited by V.A. Kostelecky (World Scientific, Singapore, 1999), p. 220; hep-ph/9902228.

185. R.E. Allen, "New Physics Near 1 TeV and Above", in *Beyond the Desert '99*, edited by H. V. Klapdor-Kleingrothaus (IOP, Bristol, 2000); hep-ph/9909430.
186. R.E. Allen and A. Mondragon, "Angular Distribution of Jets in Higgs Decays from a New Theory", in *Particles, Strings, and Cosmology*, edited by K. Cheung, J. F. Gunion, and S. Mrenna, (World Scientific, Singapore, 2000); hep-ph/0004017.
187. R.E. Allen, "The Higgs as a Supersymmetric Partner, with a New Interpretation of Yukawa Couplings", *Proceedings of DPF2000 Meeting of APS Division of Particles and Fields* (August, 2000, Ohio State University); hep-ph/0011018.
188. T. Dumitrica, B. Torralva, and R.E. Allen, "Response of Semiconductors and Fullerenes to Fast Intense Laser Pulses", in *Computational Approaches to Predicting the Optical Properties of Materials*, edited by J. Chelikowsky, S. Louie, G. Martinez, and E. Shirley (Materials Research Society, Warrendale, Pennsylvania, 2000).
189. R.E. Allen, T. Dumitrica, and B. Torralva, "Electronic and Structural Response of Materials to Fast, Intense Laser Pulses", Chapter 7 of *Ultrafast Physical Processes in Semiconductors*, edited by K.T. Tsen (Academic, New York, 2000).
190. T. Dumitrica and R.E. Allen, "Time Evolution of Second Order Susceptibility in GaAs following a Fast Intense Laser Pulse", *Solid State Commun.* 113, 653 (2000).
191. R. E. Allen, A. Burzo, and T. Dumitrica, "Femtosecond-Scale Response of Semiconductors to Laser Pulses", in *Ultrafast Phenomena in Semiconductors V*, edited by H. Jiang, K. T. Tsen, and J. J. Song (SPIE, Bellingham, Washington, 2001).
192. B. Torralva, T. A. Niehaus, M. Elstner, S. Suhai, Th. Frauenheim, and R. E. Allen, "Response of C_{60} and C_n to Ultrashort Laser Pulses", *Physical Review B* 64, 153105 (2001).
193. R. E. Allen and A. R. Mondragon, "Higgs Bosons May Be Sneutrinos", *Snowmass 2001 proceedings*, edited by Norman Graf (eConf C010630, SLAC-R-599); hep-ph/0111219.
194. A. R. Mondragon and R. E. Allen, "The Vacuum Energy from a New Perspective", in *Relativistic Astrophysics*, edited by J. C. Wheeler and H. Martel (A.I.P., Melville, New York, 2001); astro-ph/0103161.
195. A. R. Mondragon and R. E. Allen, "Dark Matter Equation of Motion and Density Profiles", *Proceedings of PASCOS 2001*, edited by P. H. Frampton (Rinton Press, Princeton, 2001); astro-ph/0106296.
196. B. Torralva and R. E. Allen, "Mechanisms for Laser Control of Chemical Reactions", *Journal of Modern Optics* 49, 593 (2002).
197. T. Dumitrica and R. E. Allen, "Nonthermal Transition of GaAs in Ultra-Intense Laser Radiation Field", *Lasers and Particle Beams* 20, 213 (2002).
198. T. Dumitrica and R. E. Allen, "Femtosecond-Scale Response of GaAs to Ultrafast Laser Pulses", *Physical Review B [Rapid Communications]* 66, 081202 (2002).

199. R. E. Allen, "Dark Matter, Quantum Gravity, Vacuum Energy, and Lorentz Invariance", Proceedings of the Second Meeting on CPT and Lorentz Symmetry, edited by V. A. Kostelecky (World Scientific, Singapore, 2002); hep-th/0110208.
200. R. E. Allen, "Spin 1/2 bosons etc. in a theory with Lorentz violation", Proceedings of Beyond the Desert 2002, edited by H. V. Klapdor-Kleingrothaus (IOP, 2003); hep-th/0008032.
201. Five brief articles in the Concise Encyclopedia of Supersymmetry, edited by Jonathan Bagger, Steven Duplij, and Warren Siegel (Kluwer, 2003).
202. R. E. Allen and A. R. Mondragon, "No spin-statistics connection in nonrelativistic quantum mechanics", Physical Review A 68, 046101 (2003); quant-ph/ 0304088.
203. Y. Dou, B. R. Torralva, and R. E. Allen, "Semiclassical electron-radiation-ion dynamics (SERID) and cis-trans photoisomerization of butadiene", Journal of Modern Optics 50, 2615 (2003).
204. Y. Dou, B. R. Torralva, and R. E. Allen, "Detailed mechanism for trans-cis photoisomerization of butadiene following a femtosecond-scale laser pulse", Journal of Physical Chemistry 107, 8817 (2003).
205. Y. Dou, B. R. Torralva, and R. E. Allen, "Interplay of electronic and nuclear degrees of freedom in a femtosecond-scale photochemical reaction", Chemical Physics Letters 392, 352-357 (2004).
206. Y. Dou and R. E. Allen, "Another important coordinate in the photoisomerization of cis-stilbene", Chemical Physics Letters 378, 323 (2003).
207. Y. Dou and R. E. Allen, "Detailed dynamics of a complex photochemical reaction: cis-trans photoisomerization of stilbene" Journal of Chemical Physics 119, 10658 (2003).
208. T. Dumitrica, A. Burzo, Y. Dou, and R. E. Allen, "Response of Si and InSb to Ultrafast Laser Pulses", Physica Status Solidi (b) 241, 2331-2342 (2004).
209. M. O. Scully, R. E. Allen, Y. Dou, K. T. Kapale, M. Kim, G. Chen, and A. Svidzinsky "Molecular Calculations with Two-Center Correlated Orbitals", Chemical Physics Letters 389, 385 (2004).
210. R. E. Allen, "Lorentz-Violating Supergravity", Proceedings of Beyond the Desert 2003, edited by H. V. Klapdor-Kleingrothaus (Springer, 2004); hep-th/0310039.
211. R. E. Allen and S. Yokoo, "Searching for Lorentz Violation", Nuclear Physics B (Suppl.) 134, 139 (2004); hep-th/0402154.
212. Y. Dou and R. E. Allen, "Dynamics of the photocyclization of cis-stilbene to dihydrophenanthrene", Journal of Modern Optics 51, 2485-2491 (2004).
213. Petra Sauer, Yusheng Dou, Ben R. Torralva, and Roland E. Allen, "SERID: A technique for simulations of complex chemical systems responding to intense fields on short time scales", in *Frontiers of Nonlinear Physics*, edited by Alexander Litvak (Russian Academy of Sciences, Nizhny Novgorod, 2005), p. 279.
214. R. E. Allen and S. Yokoo, "Particles and propagators in Lorentz-violating supergravity", in *CPT and Lorentz Symmetry III*, edited by V. A. Kostelecky (World Scientific, Singapore, 2005); hep-th/0501002.

215. R. E. Allen and S. Yokoo, “Sfermions and gauginos in a Lorentz-violating theory”, in *Particles, Strings and Cosmology*, edited by George Alverson, Emanuela Barberis, Pran Nath, and Michael T. Vaughn (Singapore, World Scientific, 2005); hep-th/0501003.
216. Petra Sauer, Rui-Hua Xie, Yusheng Dou, Ben Torralva, and Roland E. Allen, “Femtosecond-scale photodissociation of benzene”, *Journal of Modern Optics* 52, 2423-2433 (2005).
217. Rui-Hua Xie, Vedene H. Smith, Jr., and Roland E. Allen, “Spectroscopic Properties of Dipicolinic Acid and Its Dianion”, *Chemical Physics* 322, 254–268 (2006).
218. Petra Sauer and Roland E. Allen, “Semiquantitative model for response of biological molecules containing C, N, O, and H to laser pulses, with initial application to dipicolinic acid”, *Journal of Modern Optics* 53, 2619 (2006).
219. Petra Sauer and Roland E. Allen, “Comparison of vibrational and electronic properties of dipicolinic acid with its parent ring molecule, pyridine”, in *Frontiers of Nonlinear Physics III*, edited by Alexander Litvak and Vladimir Zakharov (Russian Academy of Sciences, Nizhny Novgorod, 2007), p. 181.
220. Petra Sauer, Yuri Rostovtsev, and Roland E. Allen, “Effect of nuclear motion on the absorption spectrum of dipicolinic acid”, *Journal of Chemical Physics* 126, 024502 (2007).
221. Yusheng Dou, Yibo Lei, Zhenyi Wen, Yubin Wang, Glenn V. Lo, and Roland E. Allen, “Effect of C–C–C bond bending vibration on the photodissociation of cyclobutane”, *Applied Surface Science* 253, 6400 (2007).
222. Yusheng Dou, Yibo Lei, Anyang Li, Zhenyi Wen, Ben R. Torralva, Glenn V. Lo, and Roland E. Allen, “Detailed Dynamics of the Photodissociation of Cyclobutane”, *Journal of Physical Chemistry A* 111, 1133 (2007).
223. Petra Sauer and Roland E. Allen, “Dynamics of the photoinduced ring-opening of stilbene, a prototypical diarylethene”, *Chemical Physics Letters* 434, 260 (2007).
224. Roland E. Allen, Zorawar Wadiasingh, and Seiichirou Yokoo, “Standard supersymmetry from a Planck-scale statistical theory”, in *Dark Matter In Astroparticle and Particle Physics*, edited by H. V. Klapdor-Kleingrothaus and G. F. Lewis (World Scientific, Singapore, 2008); arXiv 0711.3816.
225. Yusheng Dou, Weifeng Wu, Hong Tang, and Roland E. Allen, “Ultrafast laser excitation and rotational de-excitation of cis-stilbene”, *Chemical Physics* 353, 104 (2008).
226. Petra Sauer and Roland E. Allen, “Multiple steps and multiple excitations in photoisomerization of azobenzene”, *Chemical Physics Letters* 450, 192 (2008).
227. Petra Sauer and Roland E. Allen, “Influence of laser pulse parameters on dynamical processes during azobenzene photoisomerization”, *Journal of Physical Chemistry A* 112, 11142 (2008).
228. Roland E. Allen, “Coupling of electrons to the electromagnetic field in a localized basis”, *Physical Review B* 78, 064305 (2008); arXiv:0805.3803 [quant-ph].
229. Chenwei Jiang, Ruihua Xie, Fuli Li, and Roland E. Allen, “*Trans-to-cis* isomerization of stilbene following an ultrafast laser pulse”, *Chemical Physics Letters* 474, 263 (2009).

230. Zhibin Lin and Roland E. Allen, “Ultrafast equilibration of excited electrons in dynamical simulations”, *J. Phys. Condens. Matter* 21, 485503 (2009).
231. Chenwei Jiang, Ruihua Xie, Fuli Li, and Roland E. Allen, “Photocyclization of trans-stilbene induced by an ultrafast laser pulse”, *Chemical Physics Letters* 487, 177 (2010).
232. Xiang Zhou, Zhibin Lin, Chenwei Jiang, Meng Gao, and Roland E. Allen, “Maximum relative excitation of a specific vibrational mode via optimum laser-pulse duration”, *Physical Review B* 82, 075433 (2010); arXiv:1001.1016 [cond-mat].
233. Roland E. Allen, “Supersymmetric $SO(N)$ from a Planck-scale statistical picture”, in *Physics Beyond the Standard Models of Particles, Cosmology and Astrophysics*, edited by H. V. Klapdor-Kleingrothaus, I. V. Krivosheina, and R. Viollier (World Scientific, 2011), arXiv:1005.1439 [hep-th].
234. Chenwei Jiang, Ruihua Xie, Fuli Li, and Roland E. Allen, “Comparative studies of the *trans-to-cis* photoisomerizations of azobenzene and a bridged azobenzene”, *Journal of Physical Chemistry A* 115, 244 (2011).
235. Chenwei Jiang, Xiang Zhou, Ruihua Xie, Fuli Li, and Roland E. Allen, “Selective control of vibrational modes with sequential femtosecond-scale laser pulses”, *Chemical Physics Letters* 515, 137 (2011).
236. Chen-Wei Jiang, Xiang Zhou, Zhibin Lin, Rui-Hua Xie, Fu-Li Li, Meng Gao, and Roland E. Allen, “Semiclassical simulations in materials science”, *Physica Status Solidi B* 248, 2008 (2011).
237. Chenwei Jiang, Ruihua Xie, Fuli Li, and Roland E. Allen, “Ultrafast *cis-to-trans* photoisomerization of a bridged azobenzene through $n\pi^*$ excitation: rotational pathway is not restricted”, *Chemical Physics Letters* 521, 107 (2012).
238. Roland E. Allen, Tyler D. Hughes, Jia Lerd Ng, Roberto D. Ortiz, Michel Abou Ghantous, Othmane Bouhali, Philippe Froguel, and Abdelilah Arredouani, “Mechanisms behind the immediate effects of Roux-en-Y gastric bypass surgery on type 2 diabetes”, *Theoretical Biology and Medical Modelling* 10: 45 (2013).
239. Zhongqu Long, Xiang Zhou, Hao Cai, Chi Chen, Ling Miao, and Roland E. Allen, “Breathing-trap mechanism for encapsulation of atomic hydrogen in C60”, *Chemical Physics Letters* 583, 114 (2013).
240. Chen-Wei Jiang, Xiang Zhou, Zhibin Lin, Rui-Hua Xie, Fu-Li Li, and Roland E. Allen, “Electronic and Structural Response of Nanomaterials to Ultrafast and Ultraintense Laser Pulses”, *Journal of Nanoscience and Nanotechnology* 14, 1 (2014).
241. Roland E. Allen, “The London-Anderson-Englert-Brout-Higgs-Guralnik-Hagen-Kibble-Weinberg mechanism and Higgs boson reveal the unity and future excitement of physics”, *Journal of Modern Optics*, DOI: 10.1080/09500340.2013.818170 (2013) and arXiv:1306.4061 [hep-ph].
242. Roland E. Allen, “The Higgs bridge”, *Physica Scripta* 89, 018001 (2014). [5000 worldwide downloads soon after publication]
243. Roland E. Allen, “From crystallography to life”, *Physica Scripta* 89, 068005 (2014).

244. Weifeng Wu, Shuai Yuan, Jiajie She, Yusheng Dou, and Roland E. Allen, “Bonded Excimer in Stacked Cytosines: A Semiclassical Simulation Study”, *International Journal of Photoenergy*, Article ID 937474 (2014).
245. Yusheng Dou, Zhisong Wang, Fuli Li, and Roland E. Allen, “Dynamics in Photoexcited DNA Bases and Related Molecules”, *International Journal of Photoenergy*, Article ID 501028 (2014).
246. Chen-Wei Jiang, Xiu-Xing Zhang, Ai-Ping Fang, Hong-Rong Li, Rui-Hua Xie, Fu-Li Li, and Roland E. Allen, “Photoisomerization dynamics of a rhodopsin-based molecule (potential molecular switch) with high quantum yields”, *Physica Scripta* 90, 025401 (2015).
247. Roland E. Allen and Suzy Lidström, “Your Higgs number — how fundamental physics is connected to technology and societal revolutions”, *Physica Scripta* 90, 028002 (2015).
248. Joshua Stenzel, Johannes Kroll, Minjie Lei, and Roland E. Allen, “Production mechanisms for predicted new Higgs-related spin 1/2 particles”, *Proceedings of the European Physical Society Conference on High Energy Physics (22-29 July 2015, Vienna, Austria)*.
249. Suzy Lidström and Roland E. Allen, “Their Higgs numbers – inspiration for young people around the world”, *Proceedings of the European Physical Society Conference on High Energy Physics (22-29 July 2015, Vienna, Austria)*.
250. Joshua Stenzel, Johannes Kroll, Minjie Lei, and Roland E. Allen, “Predicted Higgs-related spin 1/2 particles as a new dark matter candidate”, *Proceedings of the Meeting of the APS Division of Particles and Fields (August 4-8, 2015, Ann Arbor, Michigan)*.
- Roland E. Allen, “Focus issue on gravity, supergravity, and fundamental physics: the Richard Arnowitt Symposium”, *Physica Scripta* 90, 060301 (2015).
- Suzy Lidström and Roland E. Allen, “The unique advantages of and requirements for publishing in *Physica Scripta*”, *Physica Scripta* 91, 010401 (2016).
251. Roland E. Allen, “Electronic and structural response of materials to fast intense laser pulses, including light-induced superconductivity”, doi: 10.1117/12.2225129, in *Ultrafast Bandgap Photonics*, edited by Michael K. Rafailov and Eric Mazur.
252. Roland E. Allen and Suzy Lidström, “Life, the universe, and everything – 42 fundamental questions”, *Physica Scripta* 92, 012501 (2017).
- Roland E. Allen and Suzy Lidström, “21st Century frontiers—a series of articles on current challenges and future opportunities”, *Physica Scripta* 92, 010302 (2017).
253. Roland E. Allen and Aritra Saha, “Dark matter candidate with well-defined mass and couplings”, *Modern Physics Letters A* 32, 1730022 (2017); <https://www.worldscientific.com/doi/abs/10.1142/S0217732317300221> , <https://arxiv.org/abs/1706.00882> .
254. Girish Agarwal, Roland Allen, Iva Bezdekova, Robert Boyd, Goong Chen, Ronald Hanson, Dean Hawthorne, Philip Hemmer, Moochan Kim, Olga Kocharovskaya, David Lee, Sebastian Lidstrom, Suzy Lidstrom, Harald Losert, Helmut Maier, John Neuberger, Miles Padgett, Mark Raizen, Surjeet Rajendran, Ernst Rasel, Wolfgang Schleich, Marlan Scully, Gavriil Shchedrin, Gennady Shvets, Alexei Sokolov,

Anatoly Svidzinsky, Ronald Walsworth, Rainer Weiss, Frank Wilczek, Alan Willner, Eli Yablonovich, and Nikolay Zheludev, “Light, the universe, and everything—12 Herculean tasks for quantum cowboys and black diamond skiers”. *Journal of Modern Optics*, in press; <https://arxiv.org/abs/1802.06110> .

255. Roland E. Allen, “Predictions of a fundamental statistical picture”, <http://people.physics.tamu.edu/allen/Allen-Mar19-2018.pdf> , to be submitted.

Books edited:

Relativity, Particle Physics, and Cosmology: Proceedings of the Richard Arnowitt Fest, edited by Roland E. Allen (World Scientific, Singapore, 1999).

The New Cosmology, edited by R. E. Allen, D. V. Nanopoulos, and C. N. Pope (American Institute of Physics, Melville, New York, 2004).

