Curriculum Vitae

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Research Interest: Theoretical Condensed Matter Physics.

Professional Preparation:

1972	B.S.	Physics	St. Joseph's University (PA)
1978	Ph.D.	Physics	MIT

Professional Appointments:

1998-2001	Associate Chair for Undergraduate Affairs, Department of Physics, University of Pennsylvania
1989-	Professor of Physics, University of Pennsylvania
1985-8 9	Associate Professor of Physics, University of Pennsylvania
1981-85	Assistant Professor of Physics, University of Pennsylvania
1978-81	Associate Scientist, Xerox Webster Research Center, Webster NY
1975-78	Graduate Research Assistant, Massachusetts Institute of Technology
1972-75	National Science Foundation Graduate Fellow, Massachusetts Institute of Technology

Honors and Awards

2014	Leverhulme Distinguished Visiting Professor, Univ. of Loughborough
2010	Europhysics Prize of the European Physical Society
2010	Christian R. and Mary F. Lindback Foundation Award for Distinguished Teaching, University of Pennsylvania
2001	Fellow of the American Physical Society
1998	Ira Abrams Award for Distinguished Teaching, University of Pennsylvania
1981-1985	Alfred P. Sloan Fellow

External Service:

Organizer: Symposium on Weyl and Dirac Semimetals, March Meeting of the American Phyical Society, Denver CO 2014

Program Committee:International Conference on Strongly Correlated Electronic Systems, Grenoble, France (2014)

Program Committee: International Winterschool on Electronic Properties of Novel Materials (2014-)
Organizer: Tutorial Session on *Topological Insulators*, March Meeting of the American Physical Society, Boston MA 2012
Organizer, Focus Topic on *Graphene: Structure Stacking and Interactions*, March Meeting of the American Physical Society, Boston MA 2012
Organizer, 5th Lunqvist Conference on the Advancing Frontiers of Condensed Matter Physics, International School for Theoretical Physics, Trieste IT, 2011
Organizer, Focus Topic on *Nanotubes and Nanowires*, March Meeting of the American Physical Society, Montreal CA, 2004
Organizer, Franklin Medal Symposium on Nanotubes and Nanomaterials, May 2002
Organizer, Penn Symposium Celebrating the 2001 Nobel Prize in Chemistry, 2001
Organizer, Workshop: New Methods in Electronic Structure Theory, ES98, Univ. of Penn. May, 1998

Proposal Reviews for Department of Energy, Keck Foundation, National Science Foundation, Air Force Office of Scientific Research. Panelist for review for Department of Energy Grants on Theory, Modelling and Simulation, and for Early Career Awards.

Referee for Physical Review Letters, Physical Review B, Journal of Chemical Physics, Nanoletters, Science, Nature, American Journal of Physics.

University, School, and Departmental Service (since 1998)

2011-	Member Committee on Undergraduate Academic Standing
2007-2011	Member, Provost's Council on Access and Academic Support
2006-2009	Chair, Natural Sciences Subpanel, Personnel Committee, School of Arts and Sciences.
2007-2008	Member, Experimental High Energy Search Committee, Department of Physics
2005-2006	Member, Executive Committee of the College of General Studies
2006-2009	Chair for Internal Promotion Review Committees (3), Department of Physics
2006-2009	Member, Undergraduate Affairs Subcommittee, Department of Physics
2003-2004	Chair, Experimental Condensed Matter Search Committee, Dept. of Physics
2001	Organizer, Symposium to Celebrate the 2001 Nobel Prize in Chemistry
1998-2001	Associate Chair for Undergraduate Affairs, Department of Physics

Courses Taught Since 2003:

Spring 2014	Physics 518, Intro. Cond. Matter Physics
Fall 2013	Physics 170, Honors Physics I
Spring 2013	Physics 362, Electrodynamics II
Fall 2012	Physics 361, Electrodynamics I
Spring 2012	Physics 362, Electrodynamics II
Fall 2011	Physics 361, Electrodynamics I
Spring 2011	Physics 362, Electrodynamics II
Fall 2010	Physics 361, Electrodynamics I
Spring 2010	Physics 362, Electrodynamics II
Fall 2009	Physics 361, Electrodynamics I
Spring 2009	Physics 362, Electrodynamics II
Fall 2008	Physics 361, Electrodynamics I
Spring 2008	Physics 171, Honors Physics II (Introductory Electrodynamics)
Fall 2007	Physics 170, Honors Physics I (Introductory Mechanics)
Spring 2007	Physics 171, Honors Physics II (Introductory Electrodynamics)
Fall 2006	Physics 170, Honors Physics I (Introductory Mechanics)
Spring 2006	Physics 171, Honors Physics II (Introductory Electrodynamics)
Fall 2005	Physics 170, Honors Physics I (Introductory Mechanics)
Spring 2005	-- (on leave)
Fall 2004:	Physics 230, Principles III (Thermodynamics, Fluids and Waves)
Spring 2004	Physics 151, Principles II (General Electricity and Magnetism)
Fall 2003	Physics 230, Principles III (Thermodynamics, Fluids and Waves)

Collaborations: Co-authored research papers with Hongjie Dai (Chem. E, Stanford), Cees Dekker (Delft), O.L. DeLange (Physics, Kwa-Zulu Natal, South Africa), A. Brooks Harris (Penn, Physics), Alan (Charlie) Johnson (Physics, Penn), Charles Kane (Physics, Penn), Jay Kikkawa (Physics, Penn), Markus Kindermann (Georgia Tech), Petr Kral (Chem, Illinois), Stephen Lewis (Physics, Georgia), David Luzzi (MSE, Penn; School of Engineering, Northeastern), Stellan Ostlund (Chalmers), John Pierrus (Physics, Kwa-Zulu Natal, South Africa), Andrew Rappe (Chem., Penn), Michael Therien (Chem, Penn), Na Sai (Physics, UCSD/UT-Austin), Gino Segre (Penn, Physics), David Tomanek (Physics, Michigan State), Johannes Voit (Bayreuth), Ali Yazdani (Physics, Princeton) and with various Penn graduate students in Physics, Chemistry and Materials Science.

Ten Most Significant Publications:

- L. Fu, C.L. Kane and E.J. Mele "Topological Insulators in Three Dimensions" *Physical Review Letters* **98**, 106803 (2007)
- C.L. Kane and E.J. Mele "Quantum Spin Hall Effect in Graphene" *Physical Review Letters* **95**, 226801 (2005)
- C.L. Kane and E.J. Mele "Z_2 Topological Order and the Quantum Spin Hall Effect" *Physical Review Letters* **95**, 146802 (2005)

- E.J. Mele and P. Kral “Electric Polarization of Heteropolar Nanotubes as a Geometric Phase” *Physical Review Letters* **88**, 056803 (2002)
- D.J. Hornbaker, S.J. Kahng, S. Misra, B.W. Smith, A.T. Johnson, E.J. Mele, D.E. Luzzi and A. Yazdani “Mapping the One-Dimensional Electronic States of Nanotube Peapod Structures” Science **295**, 828-831 (2002) (cover story)
- E.J. Mele “Screening of a Point Charge by and Anisotropic Medium: Anamorphoses in the Method of Images” American Journal of Physics **69**, 557-562 (2001)
- C.L Kane and E.J. Mele "Size, Shape and Low Energy Electronic Structure of Single Wall CarbonNanotubes", *Physical Review Letters* **78**, 1932 (1997)
- D.P. DiVincenzo and E.J. Mele "Self Consistent Effective Mass Theory for Intralayer Screening in Graphite Intercalation Compounds" *Physical Review B* **29**, 1685 (1984)
- M.J. Rice and E.J. Mele "Elementary Excitations of a Linearly Conjugated Diatomic Polymer" *Physical Review Letters* **49**, 1455 (1982)
- E.J. Mele and M.J.Rice "Vibrational Excitations of Solitons in Polyacetylene" *Physical Review Letters* **45**, 926 (1980); **47**, 1492 (1981)

Peer Reviewed Publications:

- X. Gong and E.J. Mele ‘Stacking Textures and Singularities in Bilayer Graphene” Physical Review B 89, 121415 (2014).
- H. K. Pal, E.J. Mele and M. Kindermann "Landau level splitting in rotationally faulted multilayer grapheme" Physical Review B 89, 089403(R) (2014).
- N.A. Zimbovskaya and E.J. Mele "Electric charge and potential distributions in twisted multilayer grapheme" J. Appl. Phys. 113, 233706 (2013).
- F. Zhang, X. Li, J. Feng, C.L. Kane and E.J. Mele "Zeeman field-tuned transitions for surface Chern insulators" (in review, arXiv:1309.7682).
- J.A. Steinberg, S.M. Young, S. Zaheer, C.L. Kane, E.J. Mele and A.M. Rappe "Bulk Dirac Points in Distorted Spinels" Phys. Rev. Lett. 112, 036403 (2014).
- F. Zhang, C.L. Kane and E.J. Mele "Time reversal invariant topological superconductivity and Majorana Kramers pairs" Physical Review Letters 111, 156402 (2013).
- Fan Zhang, C.L. Kane and E.J. Mele "Topological mirror superconductivity" Physical Review Letters 111, 156403 (2013).
- Fan Zhang, A.H. MacDonald and E.J. Mele "Valley Chern numbers and boundary modes in gapped bilayer graphene" Proc. Nat. Acad. Sci. 110 10546 (2013).
- Fan Zhang, C.L. Kane and E.J. Mele "Surface state magnetization and edge states on topological insulators" Physical Review Letters 110, 146404 (2013).
- S. Zaheer, S.M. Young, D. Celluci, J.C.Y. Teo, C.L. Kane, E.J. Mele and A.M. Rappe , "Spin textures on the Fermi surface of tensile strained HgTe" Physical Review B 87, 045202 (2013).
- Anshuman Pal and E.J. Mele "Nodal Surfaces in Photoemission from Twisted Bilayer Graphene" Physical Review B 87, 205444 (2013).

- S. Johri, R. Nandkishore, R.N. Bhatt and E.J. Mele "Common path interference in Zener tunneling is a universal phenomenon" Physical Review B 87, 235413 (2013)
- A. Choi, K.H. Kim, S.J. Hong,M. Goh, K. Akagi, R.B.Kaner, N.N. Kirova, S. A. Brazovskii, A.T. Johnson, D.A. Bonnell, E.J. Mele and Y.W. Park "Probing Spin Charge Relation by Magnetoconductance in One Dimensional Polymer Nanofibers" Phys. Rev. B **86**, 155423 (2012).
- F. Zhang, C.L.Kane and E.J. Mele "Surface States of Topological Insulators" Phys. Rev. B **86**, 081303(R) (2012).
- E. J. Mele "Band Symmetries and Singularities in Twisted Bilayer Graphene" Physical Review B **84**, 235439 (2011)
- E.J. Mele "Interlayer coupling in rotationally faulted multilayer graphene" (review article for J. Phys. D **45**, 154004 (2012)
- M. Kindermann and E.J. Mele, "Landau Quantization in Twisted Bilayer Graphene: the Dirac Comb" Physical Review B **84**, 161496(R) (2011)
- S.M. Young, S. Chowdhury, E.J. Walter, E.J. Mele, C.L. Kane and A.M. Rappe, "Theoretical investigation of the topological phase of Bi_2Se_3 under mechanical strain" Physical Review B **84**, 085106 (2011)
- A.A. Maarouf and E.J. Mele "Low Energy Coherent Transport in Metallic Carbon Nanotube Junctions" Physical Review B **83**, 045402 (2011); arXiv:1012.0355
- L.A. Somers, N.A. Zimbovskaya, A.T. Johnson and E.J. Mele "Nanoparticle Shape Selection by Repulsive Interactions: Metal Islands on Few Layer Graphenes" Physical Review B **82**, 115430 (2010).
- E.J. Mele "Commensuration and Interlayer Coherence in Twisted Bilayer Graphene" *Physical Review B* **81**, 155123(R) (2010)
- D. Zhabinskaya and E.J. Mele "Casimir Interactions Between Scatterers on Carbon Nanotubes" *Physical Review B*, **80** 155405 (2009).
- P.M. Vora, X. Tu, E.J. Mele, M. Zheng and J.M. Kikkawa "Chiral Dependence of the K-Momentum Dark Excitons in Carbon Nanotubes" *Physical Review B* **81**, 155123 (2010)
- Z. Luo, L.A. Somers, Y. Dan, T. Ly, N.J.Kybert, E.J. Mele and A.T. Johnson, "Size selective nanoparticle growth on few-layer graphene films" *Nanoletters* **10**, 777 (2010)
- Z.T. Luo, P.M. Vora, E.J. Mele, A.T. Johnson and J. M. Kikkawa "Photoluminescence and Bandgap Modulation in Graphene Oxide" *Applied Physics Letters* **94**, 111909 (2009).
- **Book Chapter**: E.J. Mele and C.L. Kane, "Low Energy Electronic Structure of Graphene and its Dirac Theory" in Contemporary Concepts of Condensed Matter Physics, Vol 3, A. Zettl and Susumu Saito, eds. (Elsevier, 2008)
- D. Zhabinskaya, J. M. Kinder and E.J. Mele "Casimir Effect from Massless Fermions in One Dimension: A Force Operator Approach" *Physical Review A* **78**, 060103 (2008)
- J.M. Kinder and E.J. Mele "Nonradiative Recombination of Excitons in Carbon Nanotubes Mediated by Free Charge Carriers" *Physical Review B* **78** 155429 (2008)
- J.M. Kinder and E.J. Mele "Coherence Brightening of Excitons in Carbon Nanotubes" (in review, 2009)

- S.S. Datta, D.R. Strachan, E.J. Mele and A.T. Johnson "Surface Potentials and Layer Charge Distributions in Few-Layer Graphene Films" Nanoletters (DOI:10.1021/nl8009044)
- R.M. Russo, D.E. Luzzi and E.J. Mele "Optically Excited Carbon Nanotube as a Tonks Girardeau Gas" (in review, 2009).
- P.J. Michalski and E.J. Mele "Carbon Nanotubes in Helically Modulated Potentials" *Physical Review B* 77, 085429 (2008)
- O.L. de Lange, J. Pierrus, T. Prior and E.J. Mele "Comment on A block slipping on a sphere with friction: exact and perturbed solutions" *American Journal of Physics* **76**, 93-94 (2008)
- J.M. Kinder and E.J. Mele "Formation of subgap states in carbon nanotubes due to a transverse electric field" *Physical Review B* **76**, 195438 (2007)
- P.J. Michalski and E.J. Mele "Continuum Theory for piezoelectric response of chiral nanotubes under uniaxial and torsional stresses" *Physical Review B* **76**, 205419 (2007)
- L. Fu, C.L. Kane and E.J. Mele "Topological Insulators in Three Dimensions" *Physical Review Letters* **98**, 106803 (2007)
- T. Prior and E.J. Mele "A Block Slipping on a Sphere with Friction: Exact and Perturbed Solutions" *American Journal of Physics* **75**, 423 (2007)
- C.L. Kane and E.J. Mele "A New Spin on the Insulating State" Science (Perspectives) **314**, 1692-1693 (2006)
- R.M. Russo, E.J. Mele, C.L. Kane, I.V. Rubtsov, M.J. Therien and D.E. Luzzi "One Dimensional Diffusion Limited Relaxation of Photoexcitations in Suspensions of Single Walled Carbon Nanotubes" *Physical Review B* **74**, 041405 (2006)
- C.L. Kane and E.J. Mele "Quantum Spin Hall Effect in Graphene" *Physical Review Letters* **95**, 226801 (2005)
- C.L. Kane and E.J. Mele "Z_2 Topological Order and the Quantum Spin Hall Effect" *Physical Review Letters* **95**, 146802 (2005)
- P.J. Michalski, N. Sai and E.J. Mele "Continuum Theory for Nanotube Piezoelectricity" *Physical Review Letters* **95**, 116803 (2005)
- E.J. Mele and C.L. Kane "Many Body Effects in Carbon Nanotube Fluorescence Spectroscopy" *Solid State Communications* **135**, 527-531 (2005)
- C.L. Kane and E.J. Mele "Electron Interactions and Scaling Relations for Optical Excitations in Carbon Nanotubes" *Physical Review Letters* **93**, 197402 (2004)
- N. Sai and E.J. Mele "Microscopic Theory of Nanotube Piezoelectricity" *Physical Review B* **68**, 241405 (2003)
- C.L. Kane and E.J. Mele "Ratio Problem in Carbon Nanotube Fluorescence Spectroscopy" *Physical Review Letters*" **90**, 207401 (2003)
- A. Yazdani and E.J. Mele "Probing the Electronic Structure of Nanotube Peapods with the Scanning Tunneling Microscope" *Applied Physics A* **76**, 469-474 (2003)
- C.L. Kane, E.J. Mele, A.T. Johnson, D.E. Luzzi, B.W. Smith, D.J. Hornbaker and A. Yazdani "Theory of Scanning Tunneling Spectroscopy of Fullerene Peapods" Physical Review B **66**, 235423 (2003)
- E.J. Mele and P. Kral "Electric Polarization of Heteropolar Nanotubes as a Geometric Phase" *Physical Review Letters* **88**, 056803 (2002)

- D.J. Hornbaker, S.J. Kahng, S. Misra, B.W. Smith, A.T. Johnson, E.J. Mele, D.E. Luzzi and A. Yazdani "Mapping the One-Dimensional Electronic States of Nanotube Peapod Structures" Science 295, 828-831 (2002) (cover story)
- E.J. Mele "Screening of a Point Charge by and Anisotropic Medium: Anamorphoses in the Method of Images" American Journal of Physics 69, 557-562 (2001)
- C.L. Kane and E.J. Mele "Dielectric Control of Electrostatic Barriers for Molecular Electronics" *Applied Physics Letters* **78**, 114-116 (2001)
- P. Kral, E.J. Mele and D. Tomanek "Photogalvanic Effects in Heteropolar Nanotubes" *Physical Review Letters* **85**, 1512-1515 (2000)
- A. Maarouf, C.L. Kane and E.J. Mele "Electronic Structure of Carbon Nanotube Ropes" *Physical Review B* **61**, 11156-11165 (2000)
- P. Kral, E.J. Mele and D. Tomanek "Coherent Control of Photocurrents in Graphene and Carbon Nanotubes" *Physical Review B* **61**, 7169-7677 (2000)
- E.J. Mele and C.L. Kane "Low Energy Theory for STM Imaging of Carbon Nanotubes" in Science and Technology of Carbon Nanotubes (Kluwer Academic/Plenum Press, New York, 2000), R. Enbody and D. Tomanek, eds.; p 321-332
- C.L. Kane and E.J. Mele "Broken Symmeties in Scanning Tunneling Images of Carbon Nanotubes" *Physical Review B* **59**, R12759-12762 (1999)
- W. Clauss, D.J. Bergeron, M. Freitag, C.L. Kane, E.J. Mele and A.T. Johnson "Backscattering of Electronic States On Carbon Nanotubes Observed with Scanning Tunneling Microscopy" *Europhysics Letters* **47**, 601-607 (1999)
- M.V. Pykhtin, S.P. Lewis, A.M Rappe and E.J. Mele "Collective Motion and Structural Order in Adsorbate Vibrational Dynamics" *Physical Reviw Letters* **81**, 5940-5943 (1998)
- N. Ramer, S.P. Lewis, E.J. Mele and A.M. Rappe "Stress Induced Phase Transition in Pb(Zr_0.5 Ti_0.5) O_3" *Ferroelectrics* **206** 31 (1998)
- C. Wei, S.P. Lewis, E.J. Mele and A.M. Rappe "Efficient Scaling of Calculations Using Separable Nonlocal Potentials", *Physical Review B* **58**, 3482-3485 (1998)
- C. Wei, S.P. Lewis, E.J. Mele and A.M. Rappe "Structural and Vibrational Properties of the Vicinal Cu (211) Surface" *Physical Review B* **57**, 10062-10068 (1998)
- M.V. Pykhtin, S.P. Lewis, E.J. Mele and A.M. Rappe "Continuum Elastic Theory of Adsorbate Vibrational Relaxation" *Journal of Chemical Physics*, J. Chem. Phys.**108**, 1157 (1998)
- C.L. Kane, E.J. Mele, J.E. Fischer, R. Lee, P.Petit, A. Thess and R.E. Smalley "Temperature Dependent Resistivity in Sample of Single Wall Carbon Nanotubes" *Europhysics Letters* **41**, 683-687 (1998)
- C.L Kane and E.J. Mele "Electronic Structure and Transport in Carbon Nanotube Ropes" in *Electronic Properties of Novel Materials*, A.I.P. Conference Proceedings **442**, p143-147 (1998)
- C.L Kane and E.J. Mele "Size, Shape and Low Energy Electronic Structure of Single Wall CarbonNanotubes", *Physical Review Letters* **78**, 1932 (1997)

- C. Wei, S.P. Lewis, E.J. Mele and A.M. Rappe "Reciprocity Theorems for Ab Initio Force Calculations," *Physical Review B* **55**,15356 (1997)
- H.Y. Choi and E.J. Mele "Effects of Impurity Vertex Corrections on the NMR Coherence Peak in S-Wave Superconductors," *Physical Review B* **52**, 7549 (1995)
- E.J. Mele and M.V. Pykhtin "Rayleigh Waves at Vicinal Surfaces" *Physical Review Letters* **75**, 3878 (1995)
- J.B. Hannon, E.W. Plummer and E.J. Mele "Phonon Dispersion at the Be (0001) Surface"*Physical Review B* **53**, 2090 (1996)
- G.V. Krishna, S.C.Erwin and E.J. Mele "Three Dimensional Electronic Instabilities in Polymerized AC_{60}", *Physical Review B* , Rapid Communications B **51**, 7345 (1995)
- M.S. Deshpande, E.J. Mele, H.J. Choi and E.J. Mele "Midinfrared Conductivity in Orientationally Disordered Doped Fullerides." *Physical Review B* **50**, 6993(1994)
- S.C. Erwin and E.J. Mele "Electron Propagation in Orientationally Disordered Fullerides," *Physical Review B* **50**, 2150 (1994)
- S.C. Erwin and E.J. Mele "Tight Binding Parameterization of First Principles Dispersion Relations in Doped Fullerides," *Physical Review B* **50**, 5689 (1994)
- M.J. Rice, H.J Choi, M.S. Deshpande and E.J. Mele "Anomalous Infrared Activity and Broadening of the H_g Derived Phonons of the Metallic Fullerides" *Physical Review B* **49**, 3687 (1994)
- H. Wettering, J. Chen, N.J. DiNardo and E.J. Mele "A New Structural Model for the Alkali Induced (3x1) Reconstruction of Si (111)," *Physical Review B* **49**, 16837 (1994)
- E.J. Mele, S.C. Erwin, M. Deshpande and M.J. Rice "Disorder and Interactions in the Doped Fullerides," Conference Paper in Proceedings of the IWEP-NM94 Workshop on Novel Materials (World Scientific, 1994)
- E.J. Mele, M.S. Deshpande and S.C. Erwin"Electronic Phenomena in the Conducting Phases of Orientationally Disordered Fullerides," *Synthetic Metals* **65**, 255 (1994)
- M.S. Deshande, S.Hong, S.C. Erwin and E.J. Mele "Effective Medium Theory for the Normal State in Orientationally Disordered Fullerides," *Physical Review Letters* **71**, 2619 (1993)
- C.S. Hellberg and E.J. Mele "Luttinger Liquid Instability in the One Dimensional t-J Model" *Physical Review B* **48**, 646 (1993)
- E.J. Mele and S.C. Erwin "Anisotropic Pairing in a Three Band Model for A_3C_{60}" *Physical Review B* **47**, 2948 (1993)
- T. Yildirim, S. Hong, A. B. Harris and E.J. Mele "Orientational Phases for A_3C_{60}" *Physical Review B* **48**, 12262 (1993)
- "Surface Phonons and Dimer Ordering Transitions on Si(001) Surfaces" in *Surface Science Letters* **278**, L135-140 (1992)
- "Staging in Intercalated Graphites, Polymers and Fullerides" Lectures in The Chemistry and Physics of Intercalation II, (NATO-ASI, Plenum Press, p 93 -116, 1993)
- G. C. Segre and E.J. Mele "Three Dimensional Flux Phases" *Nuclear Physics B* **398**, 593 (1993)

- C.S. Hellberg and E.J. Mele "Phase Diagram of the One Dimensional t-J Model from Variational Theory" *Physical Review Letters* **67**, 2070 (1991) (with C.S. Hellberg)
- S. Ostlund and E.J. Mele "Local Canonical Transformations of Spin 1/2 Fermi Operators" *Physical Review B* **44**, 1991
- C. S. Hellberg and E.J. Mele "Comment on Phase Diagram of the One Dimensional t-J Model from Variational Theory" *Physical Review Letters* **69**, *(1992)* (with C.S. Hellberg)
- C.S. Hellberg and E.J. Mele "Variational Many Body States for the U=∞ Hubbard Model" International Journal of Modern Physics B **5**, 1791-1800 (1991) (with C.S. Hellberg)
- "Spin Analog Method for Collective Modes of the Hubbard Model" *Solid State Communications* **79**, 515-521 (1991).
- Ch. Bruder, E.J. Mele and G.C. Segre "Statistical Transmutation in Diluted Flux States" *Physical Review B* **43**, 5576 (1991)
- D.C. Morse and E.J. Mele "Chiral Liquid States in a Spin Free Representation for the Diluted Mott Insulator" *Physical Review B* **42**, 150-166 (1990)
- C.S. Hellberg and E.J. Mele "Composite Fermion Theory for the Strongly Correlated Hubbard Model" *Physical Review B* **44**, 1360 (1991)
- J. Voit and E.J. Mele "Superconducting and Density Wave Instabilities of Two Dimensional Flux Phases" *Synthetic Metals* **41**, 3911-3916 (1991)
- M.H. Kang, E.J. Mele, S.C. Lui, E.W. Plummer and D.M. Zehner "Atomic and Electronic Structure of the NiAl (111) Surface" *Physical Review B* **41**, 4920 (1990)
- D.C. Morse and E.J. Mele "Elastic Screening of Surface Vibrations: Surface Phonons on As:Si(111) (1x1)" *Physical Review B* **40**, 3546 (1989)
- M.J. Rice, Y.R. Wang and E.J. Mele "Optical Excitations from a Flux Phase", *Physical Review B* **40**, 5304(1989)
- A.B. Harris, T.C. Lubensky and E.J. Mele, "Flux Phases in Tight Binding Models" *Physical Review B* **40**, 2631 (1989)
- H.Y Choi, A.B. Harris and E.J. Mele "Mean Field Theory for Orientational Ordering of Conjugated Polymers, "*Physical Review B* **40**, 3766 (1989)
- H.Y. Choi and E.J. Mele "Doping Induced Structural Phase Transitions in Polyacetylene" *Physical Review B* **40**, 3439 (1989)
- O.L. Alerhand, J.D. Joannopoulos and E.J. Mele "Thermal Vibrational Amplitudes of Surface Atoms on Si (111) 2x1 and Si (001) 2x1" *Physical Review B* **40**, xxx (1989)
- "Jastrow States for Highly Correlated Two Dimensional Hubbard Fermions" *Physical Review B* **40**, 2670 (1989)
- "Parastatistics for Highly Correlated Fermi Systems in Two Dimensions" in Interacting Electrons in Reduced Dimensions (D. Baeriswyl and D. Campbell, eds. Plenum, 1990) p 357-366.
- E.J. Mele, I.A. Morrison and M.H. Kang "Pseudopotential Studies of Structural Properties of Transition Metals" World Materials Congress: Symposium on Atomistic Modelling of Materials (World Scientific Press, 1988) p 115-124.

- S.C. Lui, M.H. Kang, E.J. Mele, E.W. Plummer and D.M. Zehner "Surface States on NiAl (110)" *Physical Review B* **39**, 13149 (1989)
- "A Model for Holon Condensation in an RVB Superconductor" *Physica Scripta* Nobel Symposium **73**, T27, 82 (1989)
- J. Ma, H.Y. Choi, J.E. Fischer and E.J. Mele "Staging Phenomena in Doped Polymers," Proceedings of the International Conference on Physics and Chemistry of Synthetic Metals," *Synthetic Metals,* Santa Fe, June, 1988
- "Quasiparticle Creation and Condensation in a Resonating Valence Bond Superconductor" *Physical Review B* **38** 8940 (1988)
- M.H. Kang and E.J. Mele "Structure, Electronic and Vibrational Properties of NiAl (110)" Proceeding of the ICSOS II, Amsterdam. (J. Van Der Veen, ed., Springer, 1988) p160-165
- H.Y. Choi and E.J. Mele "Hole Polaron Propagation and Pairing in a Model for Doped CuO_2" *Physical Review B* **38** 4540 (1988)
- I.A.Morrison, M.H. Kang and E.J. Mele "First Principles Determination of the Stress Induced Phase Transition in Cu" *Physical Review B* (January, 1989)
- O.L. Alerhand and E.J. Mele "Dispersion and Dipole Activity of Surface Phonons on Si (111)" *Physical Review B* **35**, 2536 (1987)
- H.Y. Choi and E.J. Mele "Commensurability Effects and Modulated Structures in Polyanilines" *Physical Review Letters* **59**, 2188 (1987)
- M.H. Kang and E.J. Mele "First Principles Theory of the Rippled Relaxation of the NiAl (110) Surface" *Physical Review B* **36** 7371 (1987)
- O.L. Alerhand and E.J. Mele "Renormalized Acoustic Branches in the Vibrational Spectrum of Si (111) 2x1" *Physical Review Letters* **59**, 657 (1987) (with O.L. Alerhand)
- E.J. Mele and G.W. Hayden "Excitations in Conjugated Polymers" in Nonlinear Optical and Electroactive Polymers (P. Prasad, editor; Plenum, 1987) p 347-365.
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Selected Recent Talks and Presentations

(* denotes invited; list does not include talks given by supervised graduate students and postdocs)

- *"Topological Physics in Band Insulators" Physics Colloquium, Washington University, (April, 2013).
- *"An unexpected turn for twiated grapheme" PREM symposium, University of Puerto Rico and Humacao (May, 2013).
- *"Topological Physics in Band Insulators" Physics Colloquium, College of William and Mary, (October, 2013).
- *"Topological Physics in Band Insulators" Physics Colloquium, McGill University, (November, 2013).
- *"Topological Physics in Band Insulators" Physics Colloquium, Univ. de Montreal, (November, 2013).
- *"Topological Physics in Band Insulators" Physics Colloquium, Universite de Sherbrooke, (November, 2013).
- *"Twist and Textures in Multilayer Graphene" Seminar, Laboratory for Surface Modification, Rutgers University (January, 2014).
- *"Twist and Textures in Multilayer Graphene" Simons symposium on "Quantum Physics Beyond Simple Systems" Rio Grande, Puerto Rico (February, 2014).
- *"Twist and Textures in Multilayer Graphene" March Meeting of the American Physical Society, Denver CO (March, 2014).
- *"IWEPNM and the winding road to topological insulators" Tutorial lecture, International Winterschool on the Electronic Physics of Novel Materials, Kirchberg, Austria (March, 2014).
- *"Twist and Textures in Multilayer Graphene" Colloquium, National High Field Magnet Laboratory(April, 2014).
- *"Twist and Textures in Multilayer Graphene" Invited talks at ES14 (New Methods in Electronic Structure) Dallas, TX (May 2014).
- *"Twist and Textures in Multilayer Graphene" University of Gothenburg, Gothenburg Sweden (June, 2014).

- * “Symmetries Lost and Found in Multilayer Graphene” Tutorial at Summer School on Topological States of Matter, Chalmers University, Goteborg Sweden (June, 2014).
- * “The Winding Road to Topological Insulators” Tutorial at Summer School on Topological States of Matter, Chalmers University, Goteborg Sweden (June 2014).
- *"Twist and Textures in Multilayer Graphene" Nordita-Albanova colloquium, Stockholm, Sweden (June, 2014).
- *"Two and Three Dimensional Topological Insulators" Nobel Symposium on Topological States, Stockholm, Sweden (June, 2014).
- *“Topological Physics in Band Insulators” Physics Colloquium, University of Houston, February 2013.
- *“The New Spin on Insulators” High School Teachers Lecture Series, Laboratory for Research on the Structure of Matter, February 2013.
- *“Topological band theory and twisted multilayer graphene,” Physics Colloquium, University of Virginia, November 2012.
- *“Topological Physics in Band Insulators” IASSF Symposium, Seoul South Korea, November 2012.
- * “Topological Physics in Band Insulators” Physics Club, University of Pennsylvania, September 2012
- *“Topological Physics in Band Insulators” Four tutorial lectures given at the Windsor Summer School for Condensed Matter Physics, Windsor UK, August 2012.
- *“An unexpected turn for twisted graphenes” Nordita, Stockholm, August 2012
- *“Topological Band Theory and Twisted Multilayer Graphenes” Meeting of the Electrochemical Society, Seattle WA, May 2012.
- *”An Unexpected Turn for Twisted Graphenes” Chez Pierre Condensed Matter Seminar, April 2012
- *“Topological Band Theory and Twisted Multilayer Graphenes” Physics Colloquium, University of Kentucky, March 2012
- *“Topological Band Theory and Twisted Multilayer Graphenes” NIST Physical Sciences Seminar, March 2012
- *“Topological Band Theory and Twisted Multilayer Graphenes” Physics 501 Graduate Seminar, March 2012.
- *An Unexpected Turn for Twisted Graphenes” Simons Symposium: Quantum Mechanics Beyond Simple Systems” St. John, USVI, January 2012
- *”Topological Band Theory and Twisted Multilayer Graphene” International Workshop on the Science and Technology of Epitaxial Graphene” St. Augustine, FL, October 2011
- *”Commmensuration and Interlayer Coherence in Few Layer Graphenes” Meeting of the Electrochemical Society, Montreal CA, May 2011.
- *”Interlayer Physics in Few Layer Graphenes” March Meeting of the American Physical Society, Dallas TX, March 2011
- *”Angles on the Head of a Pin: Moire Physics in Twisted Bilayer Graphene”, NIST seminar, December 2010.

- *"Commensuration and Interlayer Coherence in Twisted Bilayer Graphene" Workshop on Science and Technology of Epitaxial Graphene (STEG) Amelia Island, FL, September 2010.
- *"Commensuration and Interlayer Coherence in Twisted Bilayer Graphene" ICAM Workshop on Exotic Insulators" Johns Hopkins University, January 2010.
- *"Angles on the Head of a Pin: Moire Physics in Multilayer Graphene" IBM Physical Sciences Seminar, February, 2010.
- "Commensuration and Interlayer Coherence in Twisted Bilayer Graphene" March Meeting of the American Physical Sociey, March 2010.
- *"Angles on the Head of a Pin: Moire Physics in Multilayer Graphene" Physics Colloquium, University of Delaware, March 2010.
- "Commensuration and Interlayer Coherence in Twisted Bilayer Graphene" Graphene Week, University of Maryland, April 2010.
- *"Clean Answers to Some Dirty Problems in Graphene" Third Annual Symposium on Materials by Design, Humacao PR, May 2009.
- *"Clean Answers to Some Dirty Problems in Graphene" First-year seminar, University of Pennsylvania, March 2009.
- *"Clean Answers to Some Dirty Problems in Graphene" Physics Colloquium, Lehigh University (October, 2008)
- "Optically Excited Nanotube as a Tonks-Girardeau Gas" Fall Meeting of the Materials Research Society, Boston MA (November, 2007)
- *"The Gathering Storm," at *Symposium on Electronics and Photonics*, MIT (May, 2007)
- "One Dimensional Exciton Diffusion on Semiconducting Nanotubes Using Time Resolved Photoabsorption Spectroscopy," *March Meeting of the American Physical Society*, Denver CO (March, 2007)
- *"Many Body Effects in Nanotube Fluorescence Spectroscopy," *Meeting of the International Society for Optical Engineering* (SPIE), San Diego, CA (August, 2006)
- *"Many Body Effects in Nanotube Fluorescence Spectroscopy," *Workshop on Nanotube Optics and Nanospectroscopy*, Telluride CO (July, 2005)
- *"Many Body Effects in Carbon Nanotube Fluorescence Spectroscopy" *207th Meeting of the Electrochemical Society*, Quebec City (May, 2005)
- *"Nanotubes as Optical and Piezoelectric Materials," *Advancing Frontiers of Optical and Quantum Effects in Condensed Matter*, Trieste IT (May, 2004)
- "Electron Interactions, Excitons and Carbon Nanotube Fluorescence Spectroscopy" *March Meeting of the American Physical Society*, Montreal (March, 2004)
- *"Excitons in Carbon Nanotube Fluorescence Spectroscopy" *XVII-th International Winterschool on Electronic Phenomena in Novel Materials*, Kirchberg, Austria (March, 2003)
- *"Piezoelectric Nanotubes," *Workshop on Methods in Electronic Structure Theory*, Minneapolis MN (May, 2003)
- *"Quantum Geometric Phases in Nanotubes," Seminars/Colloquiua presented at NEC-Princeton, Georgia Institute of Technology, Rutgers University, University of Georgia, Boston University, Pennsylvania State University, Ohio State University

Students
(Supervised 14 students to the Ph.D. degree and 4 student to the M.S. degree at Penn)

Current: Zaharias Addison (graduate student)
Madeleine Phillips (graduate student)
Saad Zaheer (graduate student)

Xingting Gong (undergraduate)
Julia Steinberg (undergraduate)
Sam Lobel (undergraduate, pending)

Previous: Dina Zhabinskaya (thesis: *Casimir Interactions Between Scatterers on Carbon Nanotubes*, Ph.D. 2009)
Paul Michalski (thesis: *Low Energy Electronic Phnenomena in Nanotubes,* Ph.D. 2008)
Jesse Kinder (thesis: *Modification of Electronic and Optical Properties of Carbon Nanotubes Due to Applied Fields and Local Environments,* Ph.D. 2008)
Ahmed Maarouf (thesis: *Electronic Properties of Carbon Nanotube Structures*, Ph.D. 2003)
Michael V. Pykhtin (thesis: *Continuum Elastic Theory of Dynamics of Surfaces and Interfaces*, Ph.D. 1999)
Chengyu Wei (thesis: *Properties of Vicinal Surfaces from Ab Initio Theory*, Ph.D. 1996)
Suklyun Hong (thesis: *Temperature dependence of exchange and correlations in an electron gas*, Ph.D. 1995)
Maneesh Deshpande (thesis: *Electronic and vibrational properties of alkali doped fullerides*, Ph.D. 1995)
C. Stephen Hellberg (thesis: *Ground State Properties of Strongly Interacting Fermion Systems*, Ph.D. 1993)
Myung Ho Kang (thesis: *A theoretical study of the structural properties of the nial (110) and (111) surfaces : modified mixed-basis pseudopotential approach*, Ph.D. 1989)
Han-Yong. Choi (thesis: *Theoretical study of structural modulations in low-dimensional systems*, Ph.D. 1989)
Oscar L. Alerhand (thesis: *Electrons and phonons on reconstructed silicon surfaces*, Ph.D. 1987)
Geoffrey W. Hayden (thesis: *Self-localized excitations in II-electron systems*, Ph.D. 1987)
David P. DiVincenzo (thesis: *Structural and elastic properties of graphite intercalation compounds*, Ph.D. 1983)

Postdoctoral Associates

2011-	Fan Zhang
2001-2003	Na Sai, (presently at Computational Materials Group, University of Texas at Austin)
1993-1994	Steven C. Erwin (presently Research Physicist, Materials Science and Technology Division, Naval Research Labs)
1982-1984	Douglas C. Allan (presently Member of Research Staff, Corning)

Examples of professional preparation in a sentence, how to use it. 10 examples: Change in teacher candidates is gradual and often imperceptible and is impactedâ€¦Â Change in teacher candidates is gradual and often imperceptible and is impacted by diverse developmental events that occur during professional preparation. From the Cambridge English Corpus. The Office of Professional Preparation (OPP) collaborates with faculty to elevate the research-practice relationship and is committed to maintaining highly effective professional programs and experiences that are engaged in continuous improvement.Â Welcome! The office provides coordinated services for field education, conducts assessments and evaluations of programs, sites, and supervisors, and supports students and alumni seeking professional licensure or certification. COVID-19 Field-Based Resources. Translations in context of "and professional preparation" in English-Russian from Reverso Context: The programme makes provision not only for the careful and professional preparation of families to which such children will be returned but also for measures to promote a more positive attitude among the public to such children and to set in place the necessary infrastructure for them.Â These examples may contain rude words based on your search. These examples may contain colloquial words based on your search. Professional preparation for practice is a complexity of knowledge, inquiry, aspirations and culture that spans a multitude of fields. Regardless of the professional field under consideration, the goal is the same â€“ to prepare students to become practitioners in the profession. In this chapter, we focus on four main areas as a pragmatic overview to preparation for professional practice: (1) a brief history of professional preparation for practice in The specialized professional preparation of teachers of young adolescents must be a high priority of teacher preparation programs. The Association for Middle Level Education is committed to promoting actions that will assure that all young adolescents are taught by highly qualified teachers. AMLE continues to be the leader in promoting responsive policies, practices, and programs for young adolescents and their teachers.