Nuh GEDIK

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EDUCATION

Ph.D. Physics (GPA 4.0/4.0*),* ***University of California, Berkeley*** (05/04)
M.A. Physics (GPA 4.0/4.0)**,** ***University of California, Berkeley*** (05/01)
B.S. Physics (1st Honors), ***Bogazici University, Istanbul, Turkey*** (08/98)

APPOINTMENTS

Associate Professor, Physics Department, ***MIT*** (07/13 – present)
Assistant Professor, Physics Department, ***MIT*** (01/08 – 07/13)
Postdoctoral Scholar, Prof. Ahmed Zewail group, Chemistry Department, ***Caltech*** (07/04 – 01/08)
Graduate Student Researcher, Prof. Joe Orenstein group, Physics Department, ***UC Berkeley*** (06/99 – 05/04)

HONORS AND AWARDS

DARPA Young Faculty Award (2013)
Biedenharn Career Development Professorship (2012-2015)
Plenary Speaker, 3rd. International Conference in Superconductivity and Magnetism (ICSM2012)
Alfred P. Sloan Fellowship (2012-2014)
DOE Early Career Award (05/11)
Solomon Buchsbaum Research Fund Award, MIT Research Support Committee (05/11)
NSF CAREER Award (07/09)
NEC Corporate Fund Award, MIT Research Support Committee (06/08)
Michael and Philip Platzman Fund for Junior Faculty in Physics, MIT (01/08)
Berkeley Physics Department Fellowship (08/98 – 08/00)
The Scientific and Technical Research Council of Turkey Fellowship (08/95 – 08/98)
Bogazici University Physics Department Fellowship (08/95 – 08/98)
7th Rank Among Over 1 Million Candidates, The University Entrance Exam in Turkey (06/95)
Bronze Medal, 26th International Physics Olympiad Canberra, Australia (07/95)
Silver Medal, National Physics Olympiad of Turkey (12/94)

PUBLICATIONS

1. "*Observation of Floquet-Bloch States in a Topological Insulator*" Y.H. Wang, Hadar Steinberg, P. Jarillo-Herrero, and N. Gedik ***Science 342,*** *453 (2013)* (pdf) ***(featured in MIT News)***
2. "*Observation of suppressed terahertz absorption in photoexcited graphene*" A.J. Frenzel, C.H. Lui, W. Fang, N.L. Nair, P.K. Herring, P. Jarillo-Herrero, J. Kong, and N. Gedik ***Appl. Phys. Lett. 102*** 113111 (2013) (**pdf**)
3. *"Spin Induced Optical Conductivity in the Spin Liquid Candidate Herbertsmithite"* Daniel V. Pilon, Chun Hung Lui, Tianheng Han, David B. Shrekenhamer, Alex J. Frenzel, William J. Padilla, Young S. Lee and Nuh Gedik ***Phys. Rev. Lett. 111***, 127401 (2013) (pdf)
4. *"Fluctuating Charge Density Waves in a Cuprate Superconductor"* Darius H. Torchinsky*, Fahad Mahmood*, Anthony T. Bollinger, Ivan Božovic, and Nuh Gedik ***Nature Materials 12*****,** 387-391 (2013) (**pdf**)
5. *"Circular dichroism in angle-resolved photoemission spectroscopy of topological insulators"* Yihua Wang and Nuh Gedik Phys. ***Status Solidi RRL 7*** , No. 1–2, 64–71 (2013) (**pdf**)
6. *"Measurement of intrinsic Dirac fermion cooling on the surface of a topological insulator Bi_2Se_3 using time- and angle-resolved photoemission spectroscopy"* Y. H. Wang, D. Hsieh, E. J. Sie, H. Steinberg, D. R. Gardner, Y. S. Lee, P. Jarillo-Herrero, and N. Gedik ***Phys. Rev. Lett.*** **(2012)** (pdf)
7. "*Theoretical and Experimental Study of Second Harmonic Generation from the Surface of the Topological Insulator Bi_2Se_3*" J. W. McIver, D. Hsieh, S.G. Drapcho, D.H. Torchinksy, D.R. Gardner, Y.S. Lee, and N. Gedik Phys. ***Rev. B 86*****,** 035327 (2012) (pdf)
8. "*Observation of a metal-to-insulator transition with both Mott-Hubbard and Slater characteristics in Sr2IrO4 from Time-Resolved Photo-Carrier Dynamics*" D. Hsieh, F. Mahmood, D. H. Torchinsky, G. Cao and N. Gedik ***Phys. Rev. B 86***, 035128 (2012) (pdf)
9. "*Control Over Topological Insulator Photocurrents with Light Polarization*" J. W. McIver*, D. Hsieh*, H. Steinberg, P. Jarillo-Herrero and N. Gedik ***Nature Nanotechnology*** *7*, 96–100 (2012) (pdf)

10. *"Observation of a warped helical spin-texture in Bi_2Se_3 from circular dichroism angle-resolved photoemission spectroscopy"* Y. H. Wang, D. Hsieh, D. Pilon, L. Fu, D. R. Gardner, Y. S. Lee and N. Gedik, ***Phys. Rev. Lett. 107,*** 207602 (2011) (pdf)
11. *"Nonequilibrium Quasiparticle Relaxation Dynamics in Single Crystals of Hole and Electron doped $BaFe_2As_2$"* Darius H Torchinsky, James W. McIver, David Hsieh, G.F. Chen, J.L. Luo, N. L. Wang and Nuh Gedik, ***Phys. Rev. B 84,*** 104518 (2011) (pdf)
12. *"Selective Probing of Photoinduced Charge and Spin Dynamics in the Bulk and Surface of a Topological Insulator"* D. Hsieh, F. Mahmood, J. W. McIver, D. R. Gardner, Y. S. Lee, and N. Gedik, ***Phys. Rev. Lett. 107,*** 077401 (2011) (pdf)
13. *"Electron Pulse Compression With a Practical Reflectron Design for Ultrafast Electron Diffraction"* Y. H. Wang, and N. Gedik, ***IEEE Journal of Selected Topics in Quantum Electronics 99***, 1-9 (2011) (pdf)
14. *"Nonlinear optical probe of tunable surface electrons on a topological insulator"* D. Hsieh*, J. W. Mc Iver*, D. H. Torchinsky, D. R. Gardner, Y. S. Lee, and N. Gedik, ***Phys. Rev. Lett. 106***, 057401 (2011) (pdf)
15. *"Band-dependent quasiparticle dynamics in the hole-doped Ba-122 iron pnictides"* Darius H. Torchinsky, James W. McIver, David Hsieh, G.F. Chen, J.L. Luo, N.L. Wang and Nuh Gedik, ***Journal of Physics and Chemistry of Solids 72***, 519-522 (2011) (pdf)
16. *"Band-dependent Quasiparticle Dynamics in Single Crystals of the $Ba_{0.6}K_{0.4}Fe_2As_2$ Superconductor Revealed by Pump-Probe Spectroscopy"* Darius H Torchinsky, G.F. Chen, J.L. Luo, N. L. Wang, and Nuh Gedik , ***Phys. Rev. Lett.*** **105**, 027005 (2010).(pdf) (Highlighted in Nature Materials)
17. "*Real time observation of cuprates structural dynamics by Ultrafast Electron Crystallography*" ***Advances in Condensed Matter Physics***, vol. 2010, Article ID 958618 (2010) *(Invited Review)*
18. "*Non-equilibrium phase transitions in cuprates observed by ultrafast electron crystallography*" N. Gedik, Ding-Shyue Yang, Gennady Logvenov, Ivan Bozovic, and Ahmed H. Zewail ***Science 316***, 425 (2007) (pdf).
19. "*Ultrafast Electron Crystallography: I. Non-equilibrium Dynamics of Nanometer-scale Structures*" Ding-Shyue Yang, N. Gedik and Ahmed H. Zewail, ***J. Phys. Chem. C 111***, 4889 (2007) (pdf). (cover story)
20. "*Observation of spin Coulomb drag in a two-dimensional electron gas*" C. P. Weber, N. Gedik, J. E. Moore, J. Orenstein, J. Stephens, and D. D. Awschalom, ***Nature*** **437,** 1330-1333 (2005). (pdf)
21. "*Abrupt transition in quasiparticle dynamics at optimal doping in a cuprate superconductor system*" N. Gedik, M. Langner, J. Orenstein, S. Ono, Yasushi Obe, and Yoichi Ando*,* ***Phys. Rev. Lett. 95***, 117005 (2005). (pdf)
22. "*Transient gratings formed by nonequilibrium quasiparticles in YBCO*", N. Gedik, J. Orenstein, Ruixing Liang, D.A. Bonn, and W.N. Hardy, ***Journal of Superconductivity*** **17** –(1): 117-120, (2004). (pdf)
23. "*Non-equilibrium quasiparticle dynamics in single crystals of YBCO Ortho II*" N. Gedik, J. Orenstein, Ruixing Liang, D.A. Bonn, and W.N. Hardy, ***Physica C*** **408-410**, 690 (2004). (pdf)
24. "*Absolute Phase Measurement in Heterodyne Detection of Transient Gratings*" N. Gedik, J. Orenstein, ***Optics Letters*** **29**, 2109 (2004). (pdf)
25. "*Single-quasiparticle stability and quasiparticle-pair decay in $YBa_2Cu_3O_{6.5}$*", N. Gedik, P. Blake, R.C. Spitzer, J. Orenstein, D.A. Bonn, Ruixing Liang, and W.N. Hardy, ***Phys. Rev. B*** **70**, 014504 (2004). (pdf)
26. "*Reply to Comments on 'Photoinduced changes of reflectivity in single crystals of $YBa_2Cu_3O_{6.5}$ (Ortho II)*" N. Gedik, J. Orenstein, D.A. Bonn, Ruixing Liang, W.N. Hardy, ***Phys. Rev. Lett.*** **91**, 169701 (2003). (pdf)
27. "*Diffusion of nonequilibrium quasi-particles in a cuprate superconductor*", N. Gedik, J. Orenstein, Ruixing, Liang, D.A. Bonn, and W.N. Hardy, ***Science*** **300**, 1410 (2003). (pdf)
28. "*Photoinduced changes of reflectivity in single crystals of $YBa_2Cu_3O_{6.5}$*" G.P. Segre, N. Gedik, J. Orenstein, D.A. Bonn, Ruixing Liang, W.N. Hardy, ***Phys. Rev. Lett.*** **88**, 137001 (2002). (pdf)

Selected News Coverage

- "Understanding a new kind of magnetism" **MIT News** (2013) (html)
- "A new look at high-temperature superconductors" **MIT News** (2013) (html)
- "*Watching electrons move at high speed*" **MIT News** (2012) (html)
- "*Synopsis: Electrons that Take the Heat*" **Physics** (2012) (html)
- "*Electronics takes on a new spin*" **MIT News,** (2012) (html)
- "*The surface surfaces*" Judy J. Cha and Yi Cui **Nature Nanotechnology (2012) (**pdf**)**
- "*Spin in the slow lane*", ***Nature*** **437,** 1249 (2005). (pdf).
- "*Broken Cooper Pairs Caught Bouncing Around*", B. Keimer, ***Science*** 300, 1381 (2003). (pdf)

RESEARCH SUMMARY

Assistant Professor, *Department of Physics, MIT* (01/08 - present)

Ultrafast electronic and structural dynamics in quantum materials: We are developing and using advanced optical techniques for investigating fascinating properties of quantum materials such as high Tc superconductors and topological insulators. Experimental techniques include ultrafast electron diffraction, time and angle resolved photoemission spectroscopy, pump-probe spectroscopy, transient grating spectroscopy and time domain terahertz spectroscopy.

Postdoctoral Researcher, *Prof. Ahmed Zewail Group, Caltech* (07/04 - 01/08)

Structural dynamics in solids and at interfaces with atomic-scale resolution: Used ultrafast electron diffraction (UED) to investigate structural dynamics in solids, nanostructures and interfacial molecular assemblies. Specific systems studied include cuprate superconductors, GaAs quantum well structures and interfacial water assemblies at hydrophobic and hydrophilic surfaces. UED can provide ultra-short spatial resolution (0.1 to 1nm) combined with ultrafast time resolution (10^{-13} to 10^{-12} s) with sub-monolayer sensitivity.

Graduate Student Researcher, Prof. Joseph Orenstein Group, UC Berkeley (05/99 - 05/04)

Quasiparticle dynamics in high temperature superconductors: Developed a novel transient grating spectroscopy setup and measured diffusion coefficient of nonequilibrium quasiparticles in high temperature superconductors for the first time, obtained elastic and inelastic quasiparticle scattering rates using ultrafast optical spectroscopy.

Optical manipulation of spins in quantum wells: Used transient spin grating spectroscopy to measure spin diffusion in quantum wells and for the first time observed spin Coulomb drag (SCD) by showing that spin diffusion is smaller than charge diffusion as a result of electron-electron interactions in excellent quantitative agreement with SCD theory.

TEACHING EXPERIENCE

Main lecturer for Vibration and Waves (Physics 8.03), Department of Physics, MIT (Fall 09, Fall 10 and Spring 12)

Recitation Instructor for Physics 8.03, 8.022 and 8.044 Department of Physics, MIT

Graduate student instructor, Physics Department, UC Berkeley (08/99 – 05/00)

Teaching assistant, Physics Department, University of Southern California (08/98– 05/99)

PROFESSIONAL ACTIVITIES

- Program committee member for two SPIE conferences: "*Nanosensing: materials and devices II" and "Nanostructure integration techniques for manufacturable devices, circuits and systems: interfaces, interconnects, and nanosystems*" (23–26 October 2005)
- Referee for Science, Nature, Nature Physics, Nature Materials, PNAS, Physical Review Letters, Chem. Phys. Lett., Phys. Rev. B and Appl. Phys. Lett.
- Invited panel member for "Ultrafast Materials Science" workshop. This study was sponsored by Council for the Division of Materials Sciences and Engineering, Office of Basic Energy Sciences of U.S. Department of Energy. The goal was to develop a comprehensive and strategic framework for research in Ultrafast Materials Science (21 -24 October 2007, Santa Fe, NM)
- International Advisory Committee Member for International Conference on Superconductivity and Magnetism (ICSM2010 and ICSM2012)
- Committee Member for QELS 2011 (the Conference on Lasers and Electro-Optics) for the subcommittee on "Optical Interactions with Condensed Matter and Ultrafast Phenomena"
- Program Committee Member of 18th International Conference on "Ultrafast Phenomena" (UP 2012)

INVITED TALKS

Over 70 invited talks at international conferences and universities

Selected Recent Invited Talks Conferences

1. "THz spectroscopy of quasiparticle dynamics in complex materials" **Frontiers of THz Science**, SLAC National Accelerator Laboratory (5-6 September, 2012)
2. "Ultrafast Probing of Dynamical Spin-Charge Coupling in Topological Insulators" **Oxide Interfaces Workshop**, Harvard University (August 7-8, 2012)

3. "Ultrafast Probing of Dynamical Spin-Charge Coupling in Topological Insulators" **Topological Protection and Non-Equilibrium States in Strongly Correlated Electron System Meeting**, School of Physics & Astronomy, St Andrews UK (July 9-11 2012)
4. "Ultrafast Probing of Dynamical Spin-Charge Coupling in Topological Insulators" **LEES 2012 Low Energy Electrodynamics in Solids**, Napa, California (July 22 - 27, 2012)
5. "Ultrafast Probing of Dynamical Spin-Charge Coupling in Topological Insulators" **Workshop on Spin-Orbit Coupling in Condensed Matter: Topological Insulators and Related Materials** in 2012 NSLS/CFN Joint Users' Meeting, BNL, Upton, NY (May 23, 2012)
6. "Ultrafast Probing of Topological Insulators and Superconductors" **Plenary talk at the 3rd International Conference on Superconductivity and Magnetism**, Istanbul, Turkey (29 April - 4 May 2012)
7. "Ultrafast Probing of Dynamical Spin-Charge Coupling in Topological Insulators" **DCMP Invited Session: Magneto-Electric and Magneto-Optical Properties of Topological Insulators** APS March Meeting Boston, MA (February 27–March 2 2012)
8. "Ultrafast probing of dynamical spin-charge coupling in topological insulators" **Gordon Conference on Ultrafast Phenomena in Cooperative System**, Galveston, TX **(**February 19-24, 2012)
9. **"Ultrafast Optical Probing of Topological Insulators" Frontiers in Optics (FiO) 2011/Laser Science (LS) XXVII San Jose, CA, (16-20 October 2011)**
10. "Simultaneous vectorial spin mapping of a topological insulator using circularly-polarized time-of-flight photoemission" **Workshop on Novel Trends in Photoemission,** Advanced Light Source User meeting (Berkeley, CA 4 October 2011)
11. "Ultrafast probing of dynamical spin-charge coupling in topological insulators" **Fifth Stig Lundqvist Conference on the Advancing Frontiers of Condensed Matter Physics, ICTP,** Trieste, Italy (July 11-15 2011)
12. "Direct Observation of Structural Dynamics with Ultrafast Electron Diffraction" ***Fast Electron Microscopy & Scattering, 2010 MRS Fall Meeting,*** Boston, MA Nov. 30, 2010
13. "Potentials and challenges in topological insulators" ***Workshop on Assessment of Potential Advances Associated with Topological Insulators*****,** UT Austin (November 19, 2010)
14. "Ultrafast electronic and structural dynamics in high temperature superconductors*" **LEES 2010 Low Energy Electrodynamics in Solids*****,*** Les Diablerets , Switzerland, July 5-10, 2010
15. "Ultrafast Electronic and Structural Dynamics in High-Temperature Superconductors" **17th Statistical Physics Days,** Sabanci University, Istanbul, Turkey (July 1st, 2010)
16. Discussion leader for "Ultrafast Phase Transitions" in Gordon conference on **"*Ultrafast Phenomena in Cooperative Systems*"** Galveston, TX (March 2, 2010)
17. "Ultrafast Structural Dynamics Observed with Atomic Scale Resolution" ***Ultrafast Processes in Materials Science, 2009 MRS Fall Meeting*****,** Boston, MA Nov. 30, 2009
18. "Ultrafast electronic and structural dynamics in superconductors" **Femtochemistry IX, The 9th international conference on fundamental ultrafast processes in chemistry, biology, and physics,** Peking University, Beijing, China August 8-13, 2009.
19. "Photoinduced structural phase transition in a cuprate superconductor observed by ultrafast electron diffraction" ***3rd International Conference on Photo-Induced Phase Transitions and Cooperative Phenomena (PIPT2008)***, Osaka, Japan, November 11-15, 2008.
20. "Ultrafast structural dynamics observed with atomic scale resolution" , ***Workshop on Dynamics of Materials in Extreme Fields in 2008 NSLS/CFN Users' Meeting***, Upton, NY (May 19, 2008)
21. "Photoinduced structural phase transition in a cuprate superconductor observed by ultrafast electron diffraction" ***Gordon Conference on Ultrafast Phenomena in Cooperative System***, Lucca (Barga), Italy (February 3-8th, 2008)
22. "Time-resolved measurements of quasiparticle recombination and propagation in cuprate superconductors ", ***8th International Conference on Materials and Mechanisms of Superconductivity and High Temperature Superconductors***, Dresden, Germany (July 9-14th, 2006).
23. "Ultrafast measurements of quasiparticle dynamics in cuprates and spin diffusion in quantum wells", ***Ultrafast dynamics of collective excitations in solids: 355. Wilhelm und Else Heraeus-Seminar***, Vitte, Hiddensee islands, Germany (September 11-15th, 2005).
24. "Quasiparticles dynamics in cuprates: recombination and propagation", ***Aspen Winter Conference 2005 in Condensed Matter Physics: High-Temperature Superconductivity***, Aspen, Co (January 14th, 2005).

25. "Recombination and diffusion of nonequilibrium quasiparticles in high-Tc cuprates", Division of Condensed Matter Physics symposium on Excitations in Strongly Correlated Materials II, ***APS March Meeting 2004***, Montreal, Canada (March 26th, 2004).
26. "Recombination and propagation of nonequilibrium quasiparticles in high-Tc superconductors", ***Dynamic inhomogeneities in complex oxides***, 14. - 20. June 2003, Bled, Slovenia.
27. "Recombination and propagation of nonequilibrium quasiparticles in high-Tc superconductors", ***CIAR Quantum Materials Summer School***, May 14th 2003 in Vancouver, Canada.

University Seminars

1. "Ultrafast Probing of Dirac Fermions in Topological Insulators" Condensed Matter Seminar, **Princeton University** (November 12th, 2012)
2. "Shining Light on Topological Insulators" Physics Department Colloquium, **Simon Fraser University**, Canada (September 21st 2012)
3. "Ultrafast Probing of Dynamical Spin-Charge Coupling in Topological Insulators" Condensed Matter Seminar, Department of Physics, **Université de Sherbrooke,** Canada (August 29th , 2012)
4. "Probing the Topological Insulators with Ultrashort Laser Pulse" Research Seminar on Optical, Electronic and Quantum Systems at the **University of Colorado at Boulder,** (February 25th 2011)
5. "Probing the Topological Insulators with Ultrashort Laser Pulses" Physics Department Colloquium, **University of South Florida**, (March 11th 2011)
6. "Probing the Topological Insulators with Ultrashort Laser Pulses" Condensed Matter Physics Seminar, **University of Maryland**, (April 7th 2011)
7. "Ultrafast electronic and structural dynamics in high temperature superconductors" Physics Department Colloquium, **North Carolina State University**, (October 25th, 2010)
8. "Time-resolved Quasiparticle Dynamics in Pnictide Superconductors", Chez Pierre Seminar, Dept. of Physics, ***MIT***, (May 10th, 2010).
9. "Ultrafast electronic and structural dynamics in high temperature superconductors" Condensed Matter Physics Seminar, ***Michigan state University*** (November 23rd, 2009)
10. "Ultrafast Structural Dynamics Observed with Atomic Scale Resolution", Condensed Matter Physics Seminar, ***UC Berkeley*** (October 12th, 2009)
11. "Ultrafast Electronic and Structural Dynamics in High Temperature Superconductors", Condensed Matter Physics Seminar, ***Princeton University*** (October 5th, 2009)
12. "Ultrafast structural dynamics observed with atomic scale resolution" Physics Department Colloquium, ***Boston College*** (January 21st, 2009)
13. "Seeing the ultra-small and capturing the ultra-fast" Physics IAP Lecture Series, ***MIT*** (Jan 20th, 2009).
14. "Ultrafast structural dynamics observed with atomic scale resolution" Condensed Matter Physics Seminar, ***Boston University*** (October 24th, 2008).
15. "Ultrafast Structural Dynamics Observed with Atomic Scale Resolution", Condensed Matter Physics Seminar, ***Florida State University, Magnet Lab*** (October 10th, 2008).
16. "Ultrafast Structural Dynamics Observed with Atomic Scale Resolution", Physical Chemistry Seminar, ***MIT*** Chemistry Department (September 23rd, 2008)
17. "Ultrafast structural dynamics observed with atomic scale resolution", Materials Science and nanotechnology Graduate Program Seminar, Institute of Materials Science & Nanotechnology, ***Bilkent University***, Ankara, Turkey (January 10th, 2008)
18. "Ultrafast structural dynamics observed with atomic scale resolution", Math-Science Seminar, ***Koc University***, Istanbul, Turkey (January 8th, 2008)
19. "Ultrafast structural dynamics observed with atomic scale resolution" Condensed-Matter Physics Seminar, Physics Department, ***Caltech***, (November 30th, 2007)
20. "Ultrafast structural dynamics observed with atomic scale resolution" CUOS Seminar, Electrical Engineering and Computer Science, ***University of Michigan***, (March 22nd, 2007)
21. "Ultrafast structural dynamics observed with atomic scale resolution" Condensed-Matter Physics Seminar, Physics Department, ***Rutgers University***, (March 20th, 2007)
22. "Ultrafast structural dynamics observed with atomic scale resolution" LASSP Seminar, Physics Department, ***Cornell University***, (February 28th, 2007)
23. "Ultrafast structural dynamics observed with atomic scale resolution" Condensed-Matter Physics Seminar, Physics Department, ***MIT***, (February 20th, 2007)

24. "Ultrafast structural dynamics observed with atomic scale resolution" Condensed-Matter Physics Seminar, Physics Department, ***University of Maryland***, (February 12th, 2007)
25. "Ultrafast structural dynamics observed with atomic scale resolution" Condensed-Matter Seminar, Physics Department, ***University of Minnesota***, (February 8th , 2007)
26. "Ultrafast structural dynamics observed with atomic scale resolution" Condensed-Matter Physics Seminar, Physics Department, ***University of Toronto, Canada***, (February 5th , 2007)
27. "Ultrafast structural dynamics observed with atomic scale resolution" Condensed-Matter Physics & Materials Science Seminar, ***Brookhaven National Lab***, (January 19th , 2007)
28. "Capturing the ultrafast motions of charge, spin and lattice in complex materials" Physics Department, ***Whittier College*** (October 27th, 2006)
29. "Time resolved measurements of charge, spin and lattice dynamics", Condensed-Matter Physics & Materials Science Seminar, ***Brookhaven National Lab***, (July 6th, 2006).
30. "Ultrafast dynamics of quasiparticles in cuprates and spins in quantum wells", Condensed Matter Seminar, Dept. of Physics and Astronomy, ***UCLA***, (November 9th, 2005).
31. "Tracking the electrons in high temperature superconductors", Dept of Physics and Astronomy, ***California State University, Northridge*** (February 9th, 2005).
32. "Tracking the quasiparticles in high temperature superconductors", Dept. of Physics, ***Bilkent University***, Ankara, Turkey (June 10th, 2004).
33. "Dynamics of quasiparticles in high temperature superconductors", Dept. of Physics, ***Middle East Technical University***, Ankara, Turkey (June 9th, 2004).
34. "Quasiparticle dynamics in high temperature superconductors", Dept. of Physics, ***Koc University***, Istanbul, Turkey (June 3rd, 2004).
35. "Tracking the quasiparticles in high temperature superconductors", Faculty of Engineering and Natural Sciences, ***Sabanci University***, Istanbul, Turkey (June 2nd, 2004).
36. "Quasiparticle dynamics in high temperature superconductors", Dept. of Physics, ***Bogazici University***, Istanbul, Turkey (June 1st, 2004).
37. "Tracking the elusive d-wave quasiparticle", Chez Pierre Seminar, Dept. of Physics, ***MIT***, (April 12th, 2004).
38. "Tracking the Quasiparticles in High Temperature Superconductors", Dept. of Physics, ***Columbia Univ***., (March 30th, 2004).
39. "Tracking the Quasiparticles in High Temperature Superconductors", ***Rowland Institute at Harvard*** (March 29th, 2004).
40. "Tracking the Quasiparticles in High Temperature Superconductors", JILA Seminar, ***JILA***, Boulder, Co. (March 15th, 2004).
41. "Tracking the elusive d-wave quasiparticle", Condensed Matter Seminar, Physics Department, ***Rice University***, (November 24th, 2003).
42. "Tracking the elusive d-wave quasiparticle", Condensed Matter Seminar, Physics Department, ***University of Texas at Austin***, (November 11th, 2003).
43. "Tracking the elusive d-wave quasiparticle", Herb Seminar, Physics Department, ***University of Wisconsin at Madison***, (October 30th, 2003).

SYNERGISTIC ACTIVITIES

Research mentor for Caltech's Freshman Summer Institute (FSI) program

The FSI program is designed to enhance the transition from high school to a research-based institution such as Caltech. It is organized by the Office for Minority Student Education and aimed especially towards minority students. During the summer of 2005, I was selected as one of the research mentors for this program and supervised an incoming freshman student in the lab

Founder and board member, Berkeley Multicultural Activity Club (BMAC), (2000-2003)

Founded BMAC for bringing students from different cultures together, served as a board member, actively involved in organizing activities and social events.