

## Curriculum Vitae

John Feuer DiTusa  
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Louisiana State University  
Department of Physics & Astronomy

### EDUCATION

Ph.D. Cornell University, Experimental Condensed Matter Physics, January 1992  
B.A. Oberlin College, Physics with honors, May 1985

### PROFESSIONAL EMPLOYMENT

- 7/16 to present Department of Physics & Astronomy, Louisiana State University, Chair.
- 8/04 to present Department of Physics & Astronomy, Louisiana State University, Professor.
- 8/99 to 7/04 Department of Physics & Astronomy, Louisiana State University, Associate Professor.
- 8/94 to 8/99 Department of Physics & Astronomy, Louisiana State University, Assistant Professor.
- 4/92 to 8/94: AT&T Bell Laboratories, Postdoctoral Member of the Technical Staff. Supervisor: Gabriel Aeppli.
- 1/92 to 4/92: School of Applied and Engineering Physics, Cornell University, Postdoctoral Research Associate. Supervisors: Professors Michael S. Isaacson and Jeevak M. Parpia.
- 6/86 to 1/92: Laboratory of Atomic and Solid State Physics, Cornell University, graduate research assistant. Supervisor: Professor Jeevak M. Parpia.

### AWARDS

- 2000 College of Basic Sciences Faculty Research Award, Louisiana State University.
- 1998 Non-tenured Faculty Award in the area of Natural & Physical Sciences, given by the Louisiana State University Chapter of the Honor Society of Phi Kappa Phi.
- 1997 National Science Foundation CAREER Award.

### MEMBERSHIP IN PROFESSIONAL SOCIETIES

- American Physical Society (1988 - present)
- Phi Kappa Phi (1998 - present)

### REFEREED PUBLICATIONS

1. Mojammel A. Khan, D. E. Graf, D. Browne, I. Vekhter, **J. F. DiTusa**, W. Adam Phelan, & D. P. Young. "Quantum oscillations and non-trivial Berry phase in the noncentrosymmetric topological superconductor candidate BiPd" Submitted (2018). <http://arxiv.org/abs/1707.04570>

2. J. Y. Liu, J. Hu, Q. Zhang, D. Graf, H. B. Cao, S. M. A. Radmanesh, D. J. Adams, Y. L. Zhu, G. F. Cheng, X. Liu, W. A. Phelan, J. Wei, M. Jaime, F. Balakirev, D. A. Tennant, **J. F. DiTusa**, I. Chiorescu, L. Spinu, & Z. Q. Mao. "A magnetic topological semimetal  $\text{Sr}_{1-y}\text{Mn}_{1-z}\text{Sb}_2$  ( $y, z < 0.1$ )" *Nature Materials* **16**, 905-910 (2017). (2017).
3. Y. Wu, Z. Ning, H. B. Cao, G. Cao, S. Karna, K. A. Benavides, G. T. McCandless, R. Jin, J. Y. Chan, W. A. Shelton, & **J. F. DiTusa** "Spin density wave instability in a ferromagnet" Submitted (2017). <http://arxiv.org/abs/1704.06727>
4. C. Dhital, L. DeBeer-Schmitt, Q. Zhang, W. Xie, D. P. Young, & **J. F. DiTusa** "Exploring the origins of the Dzyaloshinski-Moriya interaction in MnSi" *Phys. Rev. B* **96**, 214425 (2017).
5. Guixin Cao, Weiwei Xie, W. Adam Phelan, **J. F. DiTusa**, & Rongying Jin "Electrical anisotropy and coexistence of structural transitions and superconductivity in  $\text{IrTe}_2$ " *Phys. Rev. B* **95**, 035148 (2017).
6. C. Dhital, M. A. Khan, M. Saghayezhian, W. A. Phelan, D. P. Young, R. Y. Jin, & **J. F. DiTusa** "Effect of negative chemical pressure on the prototypical itinerant magnet MnSi" *Phys. Rev. B* **95**, 024407 (2017).
7. J. H. Mendez, C. E. Ekuma, Y. Wu, B. Fulfer, J. C. Prestigiacomo, M. Jarrell, J. Moreno, W. A. Shelton, D. P. Young, P. W. Adams, A. Karki, R. Jin, J. Y. Chan, & **J. F. DiTusa** "Competing magnetic states, disorder, and magnetic character of  $\text{Fe}_3\text{Ga}_4$ " *Phys. Rev. B* **91**, 144409 (2015).
8. **J. F. DiTusa** "Silicon based Magnetic Semiconductors" Chapter in the *Handbook of Spintronics*, edited by Yongbing Xu, David D. Awschalom, and Junsaku Nitta, Springer Reference (Dordrecht Heidelberg New York London) (2015).
9. L. J. Treadwell, P. Watkins-Curry, J. D. McAlpin, D. J. Rebar, J. K. Hebert, **J. F. DiTusa**, & J. Y. Chan "Investigation of Mn, Fe, and Ni incorporation in  $\text{CeCo}_2\text{Al}_3$ " *Inorganic Chemistry* **54**, 963-968 (2015).
10. **J. F. DiTusa**, S. B. Zhang, K. Yamaura, Y. Xiong, J. C. Prestigiacomo, B. W. Fuller, P. W. Adams, M. I. Brickson, D. A. Browne, C. Capan, Z. Fisk, & J. Y. Chan "Magnetic, thermodynamic, and electrical transport properties of the noncentrosymmetric B20 germanides MnGe and CoGe" *Phys. Rev. B* **90**, 144404 (2014).
11. W. A. Phelan, G. V. Nguyen, J. K. K. Wang, G. T. McCandless, E. Morosan, **J. F. DiTusa**, & J. Y. Chan. "Discovery of spin glass behavior in  $\text{Ln}_2\text{Fe}_4\text{Sb}_5$  ( $\text{Ln}=\text{La-Nd}$  and  $\text{Sm}$ )", *Inorg. Chem.* **51**, 11412-11421 (2012).
12. W. A. Phelan, G. V. Nguyen, **J. F. DiTusa**, & J. Y. Chan. "Synthesis, magnetic, transport, and thermodynamic investigation of  $\text{CeCo}(\text{Sb},\text{Sn})_3$ ", *J. Alloys Compds.* **523**, 176-181 (2012).

13. W. A. Phelan, M. J. Kangas, B. L. Drake, L. L. Zhao, J. K. K. Wang, **J. F. DiTusa**, E. Morosan, & J. Y. Chan. "Crystal Growth, Structure, and Physical Properties of  $\text{LnCu}_2(\text{Al,Si})_5$  ( $\text{Ln}=\text{La}$  and  $\text{Ce}$ )" *Inorg. Chem.* **51**, 920-927 (2012).
14. S. Guo, D. P. Young, P. W. Adams, X. S. Wu, J. Y. Chan, & **J. F. DiTusa**, "Dimensional crossover in the electrical and magnetic properties of the layered  $\text{LaSb}_2$  superconductor under pressure: The role of phase fluctuations", *Phys. Rev. B* **83**, 174520 (2011).
15. M. C. Menard, B. L. Drake, G. T. McCandless, K. R. Thomas, R. D. Hembree, N. Hal-dolaarachchige, **J. F. DiTusa**, D. P. Young, & J. Y. Chan. "A Tale of Two Polymorphs: Growth and Characterization of  $\alpha\text{-LnNiGa}_4$  ( $\text{Ln} = \text{Y}, \text{Gd-Yb}$ ) and  $\beta\text{-LnNi}_{1-x}\text{Ga}_4$  ( $\text{Ln} = \text{Tb-Er}$ ).", *Eur. J. Inorg. Chem.* 201100289 (2011).
16. **J. F. DiTusa**, V. Guritanu, S. Guo, D. P. Young, P. W. Adams, R. G. Goodrich, J. Y. Chan, & D. van der Marel, "Optical conductivity and superconductivity in  $\text{LaSb}_2$ ", *J. Phys: Conf. Ser.* **273**, 012151 (2011).
17. R. G. Goodrich, C. Capan, A. D. Bianchi, Z. Fisk, **J. F. DiTusa**, I. Vekhter, D. P. Young, L. Balicas, Y-J. Yo, T. Murphy, J. Y. Cho, & J. Y. Chan, "SC-to-AFM transition in  $\text{CeCo}(\text{In}_{1-x}\text{Cd}_x)_5$ : de Haas-van Alphen measurements", *J. Phys: Conf. Ser.* **273**, 012113 (2011).
18. **J. F. DiTusa**, R. G. Goodrich, N. Harrison, & E. S. Choi, "Fermi surface of  $\text{Cr}_{1-x}\text{V}_x$  across the quantum critical point", *Phys. Rev. B* **82**, 075114 (2010).
19. C. Capan, Y-J. Jo, L. Balicas, R. G. Goodrich, **J. F. DiTusa**, I. Vekhter, T. P. Murphy, A. D. Bianchi, L. D. Pham, J. Y. Cho, J. Y. Chan, D.P. Young, & Z. Fisk, "Fermi surface evolution through a heavy fermion superconductor-to-antiferromagnet transition: de Haas-van Alphen effect in Cd substituted  $\text{CeCoIn}_5$ ", *Phys. Rev. B* **82**, 035112 (2010) [*Editors' suggestion*].
20. S. Guo, D. P. Young, R. T. Macaluso, D. A. Browne, N. L. Henderson, J. Y. Chan, L. L. Henry, & **J.F. DiTusa**, "Magnetic and thermodynamic properties of cobalt doped iron pyrite: Griffiths phase in a magnetic semiconductor", *Phys. Rev. B* **81**, 144423 (2010).
21. S. Guo, D. P. Young, R. T. Macaluso, D. A. Browne, N. L. Henderson, J. Y. Chan, L. L. Henry, & **J.F. DiTusa**, "Charge transport in cobalt-doped iron pyrite", *Phys. Rev. B* **81**, 144424 (2010).
22. M. Li, S. L. De Rooy, D. K. Bwambok, B. El-Zahab, **J. F. DiTusa**, & I. M. Warner, "Magnetic chiral liquids derived from amino acids", *Chemical Communications* **45**, 6922-6924 (2009).
23. C. Capan, L. Balicas, T.P. Murphy, E.C. Palm, R. Movshovich, D. Hall, S.W. Tozer, M.F. Hundley, E.D. Bauer, J.D. Thompson, J.L. Sarrao, **J.F. DiTusa**, R.G. Goodrich, & Z. Fisk. "Unusual metamagnetism in  $\text{CeIrIn}_5$ ", *Phys. Rev. B* **80**, 094518 (2009).

24. N. Manyala, B.D. Ngom, A.C. Beye, R. Bucher, M. Maaza, A. Strydom, A. Forbes, A.T.C. Johnson, & **J.F. DiTusa**. “Structural and magnetic properties of epsilon-Fe<sub>1-x</sub>Co<sub>x</sub>Si thin films deposited via pulsed laser deposition”, *Appl. Phys. Lett.* **94**, 232503 (2009).
25. N. Manyala, **J.F. DiTusa**, G. Aeppli, & A.P. Ramirez. “Doping a semiconductor to create an unconventional metal”, *Nature* **454**, 976-980 (2008).
26. D.P. Gautreaux, C. Capan, **J.F. DiTusa**, D.P. Young, & J.Y. Chan. “Synthesis, structure, and physical properties on LnNi(Sn,Sb)<sub>3</sub> (Ln = Pr, Nd, Sm, Gd, Tb)”, *J. Sol. St. Chem.* **181**, 1977-1982 (2008).
27. C. Capan, R.G. Goodrich, **J.F. DiTusa**, L. Balicas, Y.J. Jo, T.P. Murphy, E.C. Palm, R. Movshovich, E.D. Bauer, M.F. Hundley, J.D. Thompson, J.L. Sarrao, D. Hall, & S.W. Tozer. “Metamagnetism in CeIrIn<sub>5</sub>: Magnetoresistance and dHvA investigation”, *Physica B - Condensed Matter* **403**, 797-799 (2008).
28. C. Capan, S. Singh, S. Wirth, M. Nicklas, H. Lee, Z. Fisk, **J.F. DiTusa**, & F. Steglich. “New hints on the origin of quantum criticality in CeCoIn<sub>5</sub>: A Hall effect study”, *Physica B* **403** 1290-1292 (2008).
29. S. Guo, D.P. Young, R.T. Macaluso, D.A. Browne, N.L. Henderson, J.Y. Chan, L.L. Henry, & **J.F. DiTusa**. “Discovery of the Griffiths phase in the itinerant magnetic semiconductor Fe<sub>1-x</sub>Co<sub>x</sub>S<sub>2</sub>”, *Phys. Rev. Lett.* **100**, 017209 1-4 (2008 ).
30. C. Capan, S. Singh, S. Nair, M. Nicklas, H. Lee, **J.F. DiTusa**, Z. Fisk, S. Wirth, & F. Steglich. “Crossover from Landau Fermi liquid to non-Fermi liquid behavior: Indications from Hall measurements on CeCoIn<sub>5</sub>”, *Physica C* **460** 678-679 (2007).
31. G.Y. Xu, C. Broholm, Y.A. Soh, G. Aeppli, **J.F. DiTusa**, Y. Chen, M. Kenzelmann, C.D. Frost, T. Ito, K. Oka, & H. Takagi. “Mesoscopic phase coherence in a quantum spin fluid”, *Science* **317**, 1049- 1052 (2007).
32. S. Singh, C. Capan, M. Nicklas, M. Rams, A. Gladun, H. Lee, **J.F. DiTusa**, Z. Fisk, F. Steglich, & S. Wirth “Probing the quantum critical behavior of CeCoIn<sub>5</sub> via Hall effect measurements” *Phys. Rev. Lett.* **98**, 57001 1-4 (2007).
33. F.P. Mena, **J.F. DiTusa**, D. van der Marel, G. Aeppli, D.P. Young, A. Damascelli, & J.A. Mydosh “Suppressed reflectivity due to spin-controlled localization in a magnetic semiconductor”, *Phys. Rev. B.* **73**, 085205 1-7 (2006).
34. N. Manyala, Y. Sidis, **J.F. DiTusa**, G. Aeppli, D.P. Young, & Z. Fisk, “Large Anomalous Hall Effect in a Silicon Based Magnetic Semiconductor”, *Nature Materials*, **3**, 255-262 (2004).
35. R.G. Goodrich, D. Browne, R. Kurtz, D.P. Young, **J.F. DiTusa**, P.W. Adams, D. Hall, “De Haas - van Alphen measurements of the electronic structure of LaSb<sub>2</sub>”, *Phys. Rev. B* **69**, 125114 1-4 (2004).

36. M. Kenzelmann, G. Xu, I.A. Zaliznyak, C. Broholm, **J.F. DiTusa**, G. Aeppli, T. Ito, K. Oka, & H. Takagi, "Structure of end states for a Haldane spin chain", *Phys. Rev. Lett.* **90**, 087202 1 - 4 (2003); and **90**, 109902.
37. D.P. Young, R.G. Goodrich, **J.F. DiTusa**, S. Guo, & P.W. Adams "High magnetic field sensor using LaSb<sub>2</sub>", *Appl. Phys. Lett.* **82**, 3713-3715 (2003).
38. J.Y. Chan, F.R. Fronczek, D.P. Young, **J.F. DiTusa** & P.W. Adams, "Synthesis, Structure, and Superconductivity in Be<sub>1.09</sub>B<sub>3</sub>" *J. Sol. St. Chem.* **163**, 385-389 (2002).
39. N. Manyala, Y. Sidis, **J.F. DiTusa**, G. Aeppli, D.P. Young, & Z. Fisk "Magnetoresistance from quantum interference effects in ferromagnets" *Nature* **404**, 581-584 (2000); and **408** 616 (2000).
40. G. Xu, G. Aeppli, M.E. Bisher, C. Broholm, **J.F. DiTusa**, C.D. Frost, T. Ito, K. Oka, R.L. Paul, H. Takagi, & M.M.J. Treacy "Holes in a Quantum Spin Liquid" *Science* **289**, 419-422 (2000).
41. V.Yu. Butko, **J.F. DiTusa**, & P.W. Adams "Tenfold Magnetoconductance in a Nonmagnetic Metal Film" *Phys. Rev. Lett.* **85**, 162-165 (2000).
42. V. Yu. Butko, **J.F. DiTusa**, & P.W. Adams "Coulomb gap: How a Metal Film Becomes an Insulator" *Phys. Rev. Lett.* **84**, 1543-1546 (2000).
43. G. Aeppli & **J.F. DiTusa** "Undoped and doped FeSi or how to make a heavy fermion metal with three of the most common elements" *Materials Science and Engineering* **B63**, 119-124 (1999).
44. **J.F. DiTusa**, K. Friemelt, E. Bucher, G. Aeppli, & A.P. Ramirez "The Heavy Fermion Metal – Kondo Insulator Transition in FeSi<sub>1-x</sub>Al<sub>x</sub>" *Phys. Rev. B* **58**, 10288-10301 (1998).
45. **J.F. DiTusa**, K. Friemelt, E. Bucher, G. Aeppli, & A.P. Ramirez "Metal Insulator Transition in the Kondo Insulator FeSi and Classic Semiconductors Are Similar" *Phys. Rev. Lett.* **78**, 2831-2834 (1997); and **78**, 4309 (1997).
46. G. Aeppli, C. Broholm, **J.F. DiTusa**, S.M. Hayden, S.H. Lee, T.E. Mason, H.A. Mook, K. Oka, T.G. Perring, A. Schroder, H. Takagi, & G. Xu "Magnetic Coherence in the Transition Metal Oxides" *Physica B* **237**, 30-35 (1997).
47. Guangyong Xu, **J.F. DiTusa**, T. Ito, K. Oka, H. Takagi, C. Broholm, & G. Aeppli "Y<sub>2</sub>BaNiO<sub>5</sub>: A Nearly Ideal Realization of the S=1 Heisenberg Chain with Antiferromagnetic Interactions" *Phys. Rev. B* **54**, R6827-R6830 (1996).
48. C. Broholm, G. Aeppli, S.-H. Lee, W. Bao, & **J.F. DiTusa** "Strong Magnetic Fluctuations in Transition Metal Oxides" *J. Appl. Phys.* **79**, 5023-5028 (1996).

49. K. Friemelt, **J.F. DiTusa**, E. Bucher, & G. Aeppli “Coulomb Interactions in Al doped FeSi at Low Temperatures” *Annalen der Physik* **5**, 175-183 (1996).
50. B. Bucher, Z. Schlesinger, D. Mandrus, Z. Fisk, J. Sarrao, **J.F. DiTusa**, C.S. Ogelsby, G. Aeppli, & E. Bucher “Charge Dynamics of Ce Based Compounds: Connection between the Mixed Valent and Kondo Insulator States” *Phys. Rev. B* **53**, R2948-R2951 (1996).
51. G. Aeppli, W. Bao, C. Broholm, S.-W. Cheong, P. Dai, S.M. Hayden, T.E. Mason, H.A. Mook, T.G. Perring, & **J.F. DiTusa** “Magnetic Correlations in Doped Transition–Metal Oxides” *Spectroscopy of Mott Insulators and Correlated Metals*, Springer Series in Solid State Sciences, **119**, Edited by A. Fujimori and Y. Tokura, Springer Verlag, Berlin, 205-212 (1995).
52. Z. Fisk, J.L. Sarrao, J.D. Thompson, D. Mandrus, M.F. Hundley, A. Miglori, B. Bucher, Z. Schlesinger, G. Aeppli, E. Bucher, **J.F. DiTusa**, C.S. Ogelsby, H-R. Ott, P.C. Canfield, & S.E. Brown “Kondo Insulators” *Physica B* **206 & 207**, 798-803 (1995).
53. **J.F. DiTusa**, S-W. Cheong, J.-H. Park, G. Aeppli, C. Broholm, & C.T. Chen “Magnetic and Charge Dynamics in a Doped One–Dimensional Transition Metal Oxide” *Phys. Rev. Lett.* **73**, 1857-1860 (1994).
54. Gabriel Aeppli, Z. Fisk, & **J.F. DiTusa**, “Are Kondo Insulators Simply Insulators?” *Proceedings of the Los Alamos Workshop on Strongly Correlated Fermi Systems*, Springer–Verlag, New York (1994).
55. **J.F. DiTusa**, S-W. Cheong, C. Broholm, G. Aeppli, L.W. Rupp, Jr., & B. Batlogg, “One–Dimensional Spin Fluctuations in a Transition Metal Oxide” *Physica B* **194-196**, 181-182 (1994).
56. Z. Schlesinger, Z. Fisk, Hai-Tao Zhang, M.B. Maple, **J.F. DiTusa**, & G. Aeppli, “Unconventional Charge Gap Formation in FeSi” *Phys. Rev. Lett.* **71**, 1748-17501 (1993).
57. K. Lane, **J.F. DiTusa**, M. Park, M.S. Isaacson, & J.M. Parpia, “Electron Heating Experiments Below the Spin Glass Resistance Maximum” *J. Low Temp. Phys.* **93**, 7-14 (1993).
58. **J.F. DiTusa**, K. Lin, M.S. Isaacson, & J.M. Parpia, “Role of Phonon Dimensionality on Electron–Phonon Scattering Rates” *Phys. Rev. Lett.* **68**, 1156-1159 (1992).
59. **J.F. DiTusa**, K. Lin, M. Park, M.S. Isaacson, & J.M. Parpia, “Finite–Size Effects in the Low–Temperature Resistivity of CuCr Films” *Phys. Rev. Lett.* **68**, 678-681 (1992).
60. **J.F. DiTusa**, Y.K. Kwong, K. Lin, M. Park, M.S. Isaacson, & J.M. Parpia, “The Electron–Phonon Scattering Rate in Thin Free–Standing Metallic Films” *Proceedings of the Seventh International Conference on Phonon Scattering in Condensed Matter*, 143-144 Springer–Verlag, New York (1992).
61. **J.F. DiTusa**, J.M. Parpia, & J.M. Phillips, “Quantum Transport in Ultrathin CoSi<sub>2</sub> Epitaxial Films” *Appl. Phys. Lett.* **57**, 452-454 (1990).

62. **J.F. DiTusa**, J.M. Parpia, & J.M. Phillips, "Low Temperature Transport in Epitaxial CoSi<sub>2</sub> Films" *Physica B* **165 & 166**, 863-864 (1990).
63. V. Kotsubo, **J.F. DiTusa**, T. Hall, R. Mihailovich, & J.M. Parpia, "Reduction of the Superfluid Fraction of <sup>3</sup>He in Sintered Silver" *Jpn. J. Appl. Phys.* **26** 143-144 (1987).
64. R.E. Warner, **J.F. DiTusa**, A. Nadasen et al. "The Mechanism of the <sup>7</sup>Li(d,2α)n Reaction From E<sub>d</sub> = 3 to 15 MeV" *Nuclear Physics* **A470**, 339-348 (1987).

## PUBLICATIONS HIGHLIGHTING MY WORK

1. Z. Fisk and S. von Molnar, "A metal left spinning" A News and Views article highlighting our paper in same issue. *Nature* **454** 951-952 (2008).
2. H. Johnston "Spinning electrons make for an unconventional metal", *PhysicsWorld.com* Headline News, Aug. 20, (2008).
3. "Discovery of 'Hidden' Quantum Order Improves Prospects for Quantum Supercomputers". Research/Researchers article in *MRS Bulletin* **32** 751 (2007).
4. S. Pearton, "Magnetic Semiconductors - Silicon Based Spintronics" A News and Views article highlighting our paper in same issue. *Nature Materials* **3** 203-204 (2004).
5. C. Sealy, "New Spin on silicon Magnetic materials", *Materials World* **7** 6 (2004).
6. T.F. Rosenbaum, "Magnetoresistance, a New spin on magnets" A News and Views article highlighting our paper in same issue. *Nature* **404**, 556-557 (2000)

## GRANTS AWARDED (Total \$13,810,900)

"LaCNS: Building Neutron Scattering Infrastructure in Louisiana" Renewal Supported by the Department of Energy (DOE) EPSCoR and the Louisiana Board of Regents August 15, 2017 - August 14, 2020, \$5,363,955. J. F. DiTusa PI.

"Shared Facilities for Materials Research: Upgrade of the Small-Angle X-Ray Scattering Beamline at LSU CAMD" \$204,951 with E. Nesterov PI Supported by the Louisiana Board of Regents, July 2017 - June 2018

"Transmission Electron Microscopy Sample Preparation System for Materials Engineering Research and Education" \$108,370 with Fenguan Lu, PI Supported by the Louisiana Board of Regents, July 2015 - June 2016.

"Building Neutron Scattering Infrastructure in Louisiana" Supported by the Department of Energy (DOE) EPSCoR and the Louisiana Board of Regents August 15, 2014 - August 14, 2017, \$5,374,000. J. F. DiTusa PI.

"Renormalized Insulators: On the verge of magnetism" Supported by the National Science Foundation (NSF) August 2012 - August 2015, \$370,000.

"Acquisition of a Quantum Design Magnetic Property Measurement System for Condensed Matter Physics and Materials Science Investigations." Supported by the Louisiana Board of Regents July 2011 - June 2012, \$200,480.

"Doping dependent transition from paramagnetism to ferromagnetism in semiconductors." Supported by the National Science Foundation (NSF) August 2008 - July 2012, \$472,000.

"Inelastic Neutron scattering investigations of magnetic semiconductors at Oak Ridge National Laboratory." Supported by The Louisiana Board of Regents through the LINK program (LEQSF) August 2008 - October 2008 \$5,000.



“Upgrade of the LSU Helium Liquefier Facility” with Philip W. Adams PI and David P. Young, Supported by the Louisiana Board of Regents through the Louisiana Education Quality Support Fund, June 2008 - June 2009, \$236,382.

“Support for Sabbatical leave at Oak Ridge National Laboratory” Supported by the Joint Institute for Neutron Scattering (JINS) August 2008 - January 2009, \$5200.

”Nanowire Silicides: Properties and Devices” Supported by the LSU Office of Research July 2007 - August 2008, \$10,000

”Materials Science and Engineering Symposium at LSU and Tulane University” with Co-PIs I. Vekhter (Physics and Astronomy), E. Podlaha (Chemical Engineering), Z. Mao (Tulane University Physics Department), Y. Lu (Tulane Mechanical Engineering Department). Supported by Louisiana Board of Regents (LEQSF) July 2005 - June 2008, \$52,000.

”Development of a Silica-Polypeptide Composite Particle Nanoscale Interdisciplinary Research Team” with PI P. Russo (Chemistry), and Co-PIs R. Cueto (Chemistry), R. Kurtz (Physics and Astronomy), W. Henk (Veterinary Medicine), and C. Leuschner ( Pennington Biomedical Research Laboratory). Supported by the LSU Office of Research \$40,000

ICAM Post-Doctoral Fellowship for Cigdem Capan, with Zack Fisk and Cigdem Capan supported by The Institute for Complex and Adaptive Matter (ICAM) May 2006 - April 2008, \$40,000

“Quantum Criticality and Magnetic Semiconductors” Supported by the National Science Foundation, August 2004 - August 2007, \$355,000.

“The Role of Coulomb Interactions in Low Carrier Density, Disordered Systems” Supported by the National Science Foundation, August 2001 - August 2004, \$285,000. REU supplement May 2004-August 2004, \$7,000.

“Equipment for Research in Condensed Matter, Materials Research, and Low Temperature Physics” with P.W. Adams, R.L. Kurtz, R.L. Stockbauer, W.O. Hamilton, W.W. Johnson, and R.G. Goodrich. Supported by the Louisiana Board of Regents through the Louisiana Education Quality Support Fund, June 1999 - June 2000, \$148,600.

“From Strongly Correlated Insulator to Metal: Transport and Magnetic Properties of Carrier Doped Insulators” Supported through the CAREER program of the National Science Foundation, August 1997 - August 2001, \$300,000. REU supplement August 1999 - July 2000, \$4,000.

“Neutron Scattering in Doped Semiconductors” Supported by NEC corporation March 1997 - March 2001, \$18,000.

“Transport and Magnetic Properties of Doped–Correlated Insulators” Supported by the Louisiana Board of Regents through the Louisiana Education Quality Support Fund, June 1996 to June 1999, \$189,442.

“Two Upper Division Laboratory Courses in Physics” with Ali R. Fazely (Southern University), Diola Bagayoko (Southern University), Chia H. Yang (Southern University), and Roy G. Goodrich (LSU). Supported by the Louisiana Board of Regents through the Louisiana Education Quality Support Fund, June 1996, \$77,000.

“High–Vacuum Dual E-Beam Evaporation System” with Evan Ma, R. McCarley, E.I. Meletis, A. Raman, K. Kelly, B. Li, M. Murphy, W. Wang, C. Kahn-Malek, P. Schilling, P. Ajmera, G.S. Lee,

and A. Srivastava. Supported by the Louisiana State Board of Regents through the Louisiana Education Quality Support Fund, June 1996, \$89,000.

“Search for Non-Fermi Liquid Behavior in Transition Metal Compounds” supported by the Louisiana State Board of Regents through the Louisiana Education Quality Support Fund, November 1995 to October 1996, \$52,000.

“Electrical Transport and Magnetic Properties of Transition Metal Compounds” Summer Research Grant from the Office of Research and Economic Development Council on Research, Louisiana State University, July 1995, \$4,000.

## INVITED TALKS AND CHAIRED SESSIONS

“STS experiments in Quantum Magnetism”, Invited talk at the STS First Experiments in Quantum Materials” workshop hosted by Oak Ridge National Laboratory, Atlanta GA, January 4th, 2017.

“Building Neutron Scattering Infrastructure in Louisiana”, Invited talk at the Department of Energy Neutron Scattering PI meeting, Gaithersburg MD, December 21st, 2016.

“Emergent Properties of Complex Transition Metal Compounds”, Invited talk at the Department of Energy Synthesis and Processing Science PI meeting, Gaithersburg MD, November 4th, 2015.

“New route to non-Fermi liquid behavior”, Invited seminar at Texas A&M University, College Station, TX, January 18, 2013.

“Griffiths phases in a magnetic semiconductor” Invited seminar at Argonne National Laboratory, Argonne, IL; November 19th 2009.

“Griffiths phases in a magnetic semiconductor” Invited talk at conference Rare events program - ‘Rare Fluctuations and Large Disorder in Quantum Systems’ at the Princeton Center for Theoretical Science; September 24th and 25th 2009.

“New route to non-Fermi liquid behavior”, Invited seminar at University of Geneva, Geneva, Switzerland, December 17, 2008.

“New route to non-Fermi liquid behavior”, Invited seminar at Oak Ridge National Laboratory Materials Science Colloquium, Oak Ridge, TN, September 19, 2008.

“New route to non-Fermi liquid behavior”, Invited seminar at Tulane University, Physics Colloquium, New Orleans, LA, September 15, 2008.

“Griffith’s phases in Co doped FeS<sub>2</sub>” Invited seminar at the International Conference and Workshop - Unconventional Phases and Phase Transitions in Strongly Correlated Electron Systems held at the Max Plank Institute for the physics of complex systems, Dresden Germany, June 2 - 7, 2008.

Chair of “Novel Orders” session at The International Conference on Strongly Correlated Electron Systems, Houston TX, May 13-18, 2007.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at Boston College, Physics Colloquium, Brookline, MA, March 14, 2007.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at University of New Orleans, General Physics Seminar, New Orleans, LA, November 15, 2006.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at Los Alamos National Laboratory, Condensed Matter Physics Seminar, Los Alamos, NM, May 24, 2006.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at The Ohio State University, Department of Physics Condensed Matter Physics Seminar, Columbus, OH, December 1, 2005.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at University of Rochester, Department of Physics Condensed Matter Physics Seminar, Rochester, NY, December 8, 2004.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at Cornell University, Department of Physics Condensed Matter Seminar, Ithaca, NY, December 6, 2004.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at University of Houston, Department of Physics Colloquium, Houston, TX, October 14, 2004.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at Texas A&M University, Solid State Physics Seminar, College Station, TX, October 13, 2004.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at University of Texas, Solid State Physics Seminar, Austin, TX, October 12, 2004.

“Fe<sub>1-x</sub>Co<sub>x</sub>Si; A Silicon Based Magnetic Semiconductor” Invited seminar at Rice University, Solid State Physics Seminar, Houston, TX, September 20, 2004.

”Magnetotransport near the Kondo Insulator to metal transition in (Fe,Co)Si” Invited presentation given at the 2001 March meeting of the American Physical Society, Seattle, WA, March 14, 2001.

“A New Mechanism for Magnetoresistance in Ferromagnets” Invited seminar at Texas A&M University, Department of Physics and Astronomy Colloquium, College Station, TX, October 26, 2000.

“Carrier Doping of Kondo Insulators” Invited seminar at Brookhaven National Laboratories, Brookhaven, NY, August 27, 1998.

“Is a Doped Kondo Insulator Different from Doped Si?” Invited seminar at Louisiana State University, Department of Physics and Astronomy Colloquium, Baton Rouge, LA, May 7, 1998.

“Is a Doped Kondo Insulator Different from Doped Si?” Invited seminar at the National High Magnetic Field Laboratory and Florida State University, Tallahassee, FL, April 17, 1998.

“Is a Doped Kondo Insulator Different from Doped Si?” Invited Talk presented at the 1998 Meeting of the American Physical Society, Los Angeles, CA, March 16-20, 1998.

“Magnetic and Charge Dynamics in a Doped Spin-Liquid: Discovery of a Sub-Gap Resonance” Invited seminar at the University of New Orleans, New Orleans, LA, April 15, 1997.

“Magnetic and Charge Dynamics in a Doped Spin-Liquid: Discovery of a Sub-Gap Resonance” Invited Colloquium at the University of Oklahoma, Norman, OK, September 21, 1995.

Chair of DCMP: KONDO SYSTEMS session at the 1995 Meeting of the American Physical Society, San Jose CA, March 20-24, 1995.

“Magnetic and Charge Dynamics in a Doped Spin-Liquid: Discovery of a Sub-Gap Resonance” Invited Talk at the 1994 Meeting of the American Physical Society, Pittsburgh, PA, March 21-25, 1994.

“The Electron-Phonon Scattering Rate in Thin Free-Standing Metallic Films” Invited Talk at the Seventh International Conference on Phonon Scattering in Condensed Matter, Ithaca, NY, August 3-7, 1992.

36 CONTRIBUTED TALKS at American Physical Society meetings, Gordon conferences, SNS/HFIR Users Group Meetings, and International Conferences on Low Temperature Physics and Strongly Correlated Electron Systems.

#### Conference Organization

Served on the Local organizing Committee for The International Conference on Strongly Correlated Electron Systems, Houston TX, May 13-18, 2007.

## MENTORING of STUDENTS and POST-DOCS

1. Ph.D. Students: R. Chapai present; M. Khan 2017; Y. Wu 2016; D.J. Rebar 2015; S. Guo 2006; N. Manyala 2000;
2. Masters Students: R. Rai MS 2008; J. Anderson MS 2000;
3. Post-Docs advised: Y. Sidis 1997; C. Capan (2005-2007); Q. Zhang (2015-present); W.A. Phelan (2015 - 2016); G. Cao (2015-2017); C. Dhital (2015 - present); S. Karna (2017-present), L. Yang (2017 - present)
4. Undergraduate students: 28 have participated in my research program at LSU.

## UNIVERSITY SERVICE HIGHLIGHTS

1. Member of the Materials and Manufacturing Strategic Planning Committee and Writing subcommittee (2017). Charged with creating a business plan to implement University Strategic Plan initiative.
2. Member of Faculty Senate (2012-2015). Including service on faculty bookstore committee.
3. Chair of the Department of Physics Steering Committee (2012 and 2014) - Member (2011-2013) and (2014 - 2015).
4. Chair of Promotion Review Committee (2014). Review and presentation of materials in regard to the promotion of a colleague to Full Professor.
5. University Research Council (2012 - 2015) - advisory committee for the Vice Chancellor of Research and Economic Development.
6. Member of PS104, Removal of Tenure with Cause Committee (2015) a case for dismissal at the request of the Chancellor's office. Reviewed testimony of witnesses and wrote a report outlining the recommendations of the committee to the Provost and Chancellor.
7. Member of PS 69, Research Misconduct Committee (2013) - faculty review committee. Reviewed a charge of research misconduct by a LSU faculty member for the Chancellor's office (2013). Reviewed case, interviewed witnesses, and provided written recommendation..
8. Chair Service Course committee (2012-2014) and member (2012 - 2016) - planned and implemented a change from a two semester sequence to a three semester sequence for our calculus based general physics courses. These courses are taken mostly by science and engineering majors and serve as general education courses. The change was implemented to allow instruction at a more reasonable pace.

9. Executive Committee of the Materials Science and Engineering Multidisciplinary Hiring Initiative - Member (2007 - present) and Interim Chair (2008). Funding for 7 faculty lines in materials science and engineering awarded based on proposal "Quantum Materials". With Steven Soper, Julia Chan, and Ilya Vekhter. Outcome: Search resulted in the hiring of National Academy member E.W. Plummer (University of Tennessee and Oak Ridge National Laboratory), as well as Mark Jarrell (University of Cincinnati), Jiandi Zhang (Florida International University), Juana Moreno (University of North Dakota), and Rongying Jin (Oak Ridge National Laboratory);
10. Physical Science Research Development Group (2007 - 2012). Advisory committee for the Vice Chancellor of Research and Economic Development.
11. Ad hoc Committee on Faculty Research Awards (2008). Committee to make recommendations on new university-wide faculty research awards to the Vice Chancellor of Research and Economic Development.
12. Task Force on Materials Science (2001 - 2006). University committee on Materials science and engineering programs at LSU. Outcome: LSU is planning a Ph.D. program in Materials Science in collaboration with the University of New Orleans and Southern University.
13. Chair of faculty search committee for Condensed Matter Experimental assistant professor (1999 - 2000). Outcome - hired David P. Young.
14. Chair of faculty search committee for Condensed Matter Theory assistant professor (2002-2003) and (2006-2007). Outcomes - hired Ilya Vekhter and Daniel Sheehy.
15. Chair of Applied Physics Planning Committee (2003 - 2005). Departmental committee to make recommendations on future hiring plans in applied physics. Outcome: Recommendation made to department and College of Basic Science to nucleate a bio-physics program in close collaboration with the Center for Advanced Microstructures and Devices (CAMD).
16. Organizing committee for Materials Science Workshop (1999). University wide workshop on the future of materials science and engineering at LSU. Outcome: Successful workshop attended by over 100 scientists from LSU and CAMD.
17. Materials Science and Engineering seminar chair (2004 - 2008). Organized the seminar series and coordinated with Tulane University for a shared invited speaker program. Outcome: Over 50 invited speakers visited enhancing the faculty and students knowledge of current topics in materials science and increased the visibility of materials science and engineering programs in southern Louisiana.
18. Development of Materials Science and Engineering seminar class for graduate students. Developed and taught for 3 years (2005-2008) a new seminar class for graduate students in science and engineering. Outcome: enhanced the educational aspects of materials science

seminars for students. Allowed the students a forum for practicing their presentation skills and to receive feedback in a non-competitive environment Introduced students to a large number of senior scientists to increase networking opportunities. Feedback from students and speakers was overwhelmingly positive.

#### Courses Taught at LSU

Physics 1201 General Physics for Physics Majors (Fall 2003, Fall 2004, Fall 2010, Fall 2011).  
Physics 1202 General Physics for Physics Majors (Spring 2004, Spring 2005, Spring 2014, Spring 2015).  
Physics 2001 General Physics (Fall 1994, Fall 2005, Fall 2006, Spring 2009, Spring 2012).  
Physics 2002 General Physics (Fall 2005, Fall 2006).  
Physics 2101 General Physics for Technical Students (Fall 1996, Fall 1998, Fall 1999, Summer 2008).  
Physics 2102 General Physics for Technical Students (Spring 1995, Fall 1997, Fall 2000, Summer 2007, Fall 2007, Spring 2008, Summer 2008, Fall 2009, Fall 2012, Spring 2013).  
Physics 2203 Introductory Modern Physics (Fall 2001, Fall 2002).  
Physics 4098 Instrumentation Electronics for Scientists (Spring 1998, Spring 1999, Spring 2000, Spring 2001).  
Physics 4125 Thermodynamics and Statistical Mechanics (Spring 2006, Spring 2007, Spring 2010, Spring 2011).  
Physics 4261 Introduction to Solid-State Physics (Spring 2002, Spring 2003).  
Physics 7360 Low Temperature Physics (Spring 2016).  
Physics 7398 Graduate Laboratory (Spring 1996, Spring 1997).  
Physics 7777 Seminar in Materials Science and Engineering (Fall 2005, Spring 2006, Fall 2006, Spring 2007, Fall 2007).  
Physics 7857 Graduate Student Seminar (Fall 1995).  
Physics 7895 Neutron Scattering (Fall 2016).  
Sabbatical Leave Fall 2008.

#### Referee Service

Served as a referee for *Science*, *Physical Review Letters*, *Physical Review B*, *Nature Materials*, *Applied Physics Letters*, *Journal of Physics: Condensed Matter*, *Journal of Physics D: Applied Physics*, *Nano Letters*, *Semiconductor Science and Technology*, *Solid State Sciences*, *Journal of Magnetism and Magnetic Materials*, *Materials Chemistry and Physics*, *New Journal of Physics*, National Science Foundation Division of Materials Research, United States Department of Energy: Basic Energy Sciences, United States Department of State, The South African National Science Foundation, The Croucher Foundation, and the European Young Investigator Awards, Oak Ridge National Laboratory: neutron beam time request - science review, National High Magnetic Field Laboratory (NHMFL) - magnet time request science review.

#### PERSONAL REFERENCES BY REQUEST