

Volodymyr Turkowski

Curriculum Vitae

CONTACT INFORMATION

Name Volodymyr Turkowski
Title Research Assistant Professor
Address Department of Physics
University of Central Florida
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Orlando, FL 32816
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HIGHER EDUCATION HISTORY

Undergraduate study: Department of Physics, National University, Kiev, Ukraine, MrSc in physics (Diploma with honor), 1995.
Thesis title: "Dynamical Symmetry Breaking in (2+1)-Dimensional Gauge Field Theories". Thesis Advisor: Prof. V.P. Gusynin.

Graduate study: Department of Physics, National University, Kiev, Ukraine, PhD in theoretical physics, 1998.
Thesis title: "Two-Dimensional Fermion-Boson Models of Superconductivity at Arbitrary Charge Carrier Density". Thesis Advisor: Prof. V.M. Loktev.

EMPLOYMENT HISTORY

1998-2001 Postdoctoral Scientist, Department of Physics, University of Salerno, Salerno, Italy
2001-2003 Postdoctoral Scientist, Department of Physics, IST, Lisbon, Portugal
2003-2006 Postdoctoral Scientist, Department of Physics, Georgetown University, Washington, D.C.
2006-2008 Postdoctoral Scientist, Department of Physics and Astronomy, University of Missouri-Columbia, Columbia, MO
2008-2011 Postdoctoral Scientist, Department of Physics, University of Central Florida, Orlando, FL

2011-present Research Assistant Professor, Department of Physics, University of Central Florida, Orlando FL

HONORS AND AWARDS

Special University Scholarship for excellence in studies, National University, Kiev, Ukraine, 1993-1995

George Soros Grant, National University, Kiev, Ukraine, 1995

Special Award for the Best MrSc Thesis Presentation, National University, Kiev, Ukraine, 1995

World Laboratory Scholarship, University of Salerno, Italy, 1998-1999

Best poster presentation, NanoFlorida 2009 Conference (co-author)

TEACHING

Courses taught

Fall 1996 -- Classical Electrodynamics for undergraduate students, Department of Physics, National University, Kiev, Ukraine

Fall 2013 – Theoretical nanophysics for undergraduate students PHZ3422 (developed the course), Department of Physics, UCF

Spring 2016 – Statistical Physics for graduate students PHY5524, Department of Physics, UCF

Spring 2019 – Classical Mechanics for undergraduate students PHY3320, Department of Physics, UCF

Invited specialized courses for graduate students and postdocs

July 2004 --- Non-Equilibrium Quantum Statistical Physics (Georgetown U., Washington, D.C.)

February 2008 --- Dynamical Mean-Field Theory (University of Missouri, Columbia)

January-April 2009 --- Time-Dependent Density Functional Theory (UCF)

April 2010 --- Biexcitons in Time-Dependent Density Functional Theory (UCF)

Other lectures

March - 2009 --- Quantum Mechanics II for graduate students (substitute for Prof. M.N. Leuenberger, UCF)

September - 2009 --- First-principle Computational Methods for Solid for graduate students (invited by Prof. S. Stolbov, UCF)

October - 2009 --- Quantum Mechanics I for graduate students (substitute of Prof. M.N. Leuenberger, UCF)

September---October 2010 --- Quantum Mechanics I Course for graduate students (substitute

for Prof. M.N. Leuenberger, UCF)
October 2010 --- Condensed Matter Quantum Field Theory I Course for graduate students
(substitute for Prof. M.N. Leuenberger, UCF)
February-March 2011 --- Quantum Mechanics I for graduate students (substitute for Prof. M.N.
Leuenberger, UCF)

Recitations (Physics Department, UCF)

Fall 2009 --- Classical Mechanics PHYS2058
Spring 2009 --- Classical Mechanics PHYS2058 (two groups)
Spring 2010 --- Electrodynamics PHYS2054
Fall 2010 --- Classical Mechanics PHYS2053
Spring 2011 --- Classical Mechanics PHYS2048 course (two groups)
Fall 2011 --- Electrodynamics PHYS2054
Spring 2012 --- Classical Mechanics PHYS2053C
Spring semester 2014 --- Classical Mechanics PHYS 2053C course

Students co-advised

Neha Nayyar (2008-2014)
Alamgir Kabir (2008-2015)
Shree Ram Acharya (2014-2018)
Jose Mario Galicia Hernandez (2014-2016)
Daniel Cercone (2015-2016)
Naseem Ud Din (2017-2020)
Tao Jiang (2018-2019)
Didarul Alam (2019 – 2023)
Jia Shi (2020 – 2023)

Post-doc co-advised

Alfredo Ramirez-Torres (2013-2015)
Jose Mario Galicia Hernandez (2019)

Student honors

N. Nayyar, graduate student, Best poster presentation, NanoFlorida 2009 Conference (co-adviser)
D. Cercone, undergraduate student, A Winner of the 13th Annual Showcase, 2016, UCF (co-adviser)

RESEARCH

Publications

Total 92 refereed publications (77 – journals, 11 -conference proceedings and 4 – invited book chapters), 2 arXiv preprints and 1 book

Refereed journal publications

1. A.D. Suprun, V.M. Turkowski, K.V. Usenko, "Dependence of the threshold characteristics for destroy of the material surface by pulsed radiation on the real conditions of absorption", *Poverkhnost' (Surface)* N1, 88 (1995) (in Russian).
2. I.A. Shovkovy and V.M. Turkowski, "Dimensional reduction in Nambu-Jona-Lasinio model in External Chromomagnetic Field", *Phys. Lett. B* **367**, 213 (1996).
3. V.M. Turkowski, "Dynamical Symmetry Breaking and Pairing in Anyon Systems", *Ukrainian Journ. of Phys.* **42**, 115 (1997) (in Ukrainian).
4. V.M. Loktev, V.M. Turkowski, S.G. Sharapov, "Crossover from superfluidity to superconductivity in 2D indirect interacted fermion system", *Journ. of Phys. Studies* **1**, 431 (1997) (in Ukrainian).
5. V.M. Loktev, S.G. Sharapov, V.M. Turkowski, "Phase diagram in 2D Froelich model of metal at arbitrary carrier density: pseudogap versus doping", *Physica C* **296**, 84 (1998).
6. V.M. Loktev and V.M. Turkowski, "On the theory of pseudogap formation in 2D attracting fermion systems", *JETP* **87**, 329 (1998).
7. V.M. Loktev and V.M. Turkowski, "Order parameter fluctuations and superconducting transition temperature in quasi-2D metals with arbitrary carrier density", *Low Temp. Phys.* **24**, 767 (1998).
8. V.M. Loktev, V.M. Turkowski, S.G. Sharapov, "On the theory of superconductivity in 2D Froelich model of metal at arbitrary carrier density", *Theor. and Math. Phys.* **115**, 694 (1998).
9. V.M. Loktev and V.M. Turkowski, "On temperature versus doping phase diagram of high-temperature superconductors", *Cond. Mat. Phys.* **1**, 113 (1998).
10. V.M. Loktev and V.M. Turkowski, "Green function of fermions in 2D superconducting Froelich model with inhomogeneous order parameter", *Low Temp. Phys.* **26**, 97 (2000).
11. F. Mancini and V. Turkowski, "Study of the Mott transition in the three-dimensional Hubbard model", *Acta Physica Polonica A* **101**, 505 (2002).
12. V.M. Loktev and V. Turkowski, "Crossover from superfluidity to superconductivity in a system with doping dependent attraction", *Physica C* **383**, 256 (2002).
13. V. Turkowski, V.R. Vieira and P.D. Sacramento, "Non-equilibrium properties of the $S=1/2$ Heisenberg model in a time-dependent magnetic field", *Physica A* **327**, 461 (2003).
14. A. Avella, F. Mancini and V. Turkowski, "Bosonic sector of the two-dimensional Hubbard model studied within a two-pole approximation", *Phys. Rev. B* **67**, 115123 (2003).
15. V.M. Loktev and V. Turkowski, "Temperature-doping phase diagram of layered superconductors". *Phys. Rev. B* **67**, 214510 (2003).
16. V.M. Loktev and V. Turkowski, "Doping-dependent superconducting properties of two-dimensional metals with different types of inter-particle coupling (Review)", *Low Temp. Phys.* **30**, 179 (2004).

17. V.M. Loktev, V. Turkowski, "On the theory of pseudogap anisotropy in the cuprate superconductors", *Int. Journ. of Mod. Phys. B* **18**, 2035 (2004).
18. V. Turkowski, J.K. Freericks, "Nonlinear response of Bloch electrons in infinite dimensions", *Phys. Rev. B* **71**, 085104 (2005).
19. J.K. Freericks, V.M. Turkowski, V. Zlatić, "F-electron spectral function of the Falicov-Kimball model in infinite dimensions: the half-filled case", *Phys. Rev. B* **71**, 115111 (2005).
20. V.M. Loktev, V.M. Turkowski, "Temperature-carrier-concentration phase diagram of a two-dimensional doped d-wave superconductor", *Low Temp. Phys.* **32**, 802 (2006).
21. V.M. Loktev, V.M. Turkowski, "On the theory of isotope-effect in the d-wave superconductors", *Journ. of Low Temp. Phys.* **143**, 115 (2006).
22. V.M. Turkowski, P.D. Sacramento, V.R. Vieira, "Domain growth in the Heisenberg ferromagnet: Effective vector theory of the $S=1/2$ model". *Phys. Rev. B* **73**, 214437 (2006).
23. V.M. Turkowski, J.K. Freericks, "Spectral moment sum rules for strongly correlated electrons in time-dependent electric fields". *Phys. Rev. B* **73**, 075108 (2006); Erratum: *Phys. Rev. B* **73**, 209902 (2006).
24. J.K. Freericks, V.M. Turkowski, and V. Zlatić, "Nonequilibrium dynamical mean-field theory", *Phys. Rev. Lett.* **97**, 266408 (2006).
25. V.M. Turkowski and J.K. Freericks, "Nonequilibrium perturbation theory of the spinless Falicov-Kimball model", *Phys. Rev.* **75**, 125110 (2007).
26. V.M. Loktev, V.M. Turkowski, "Superconductivity and superconducting order parameter phase fluctuations in a weakly doped antiferromagnet", *Phys. Rev. B* **75**, 224513 (2007).
27. V. Turkowski, C.A. Ullrich, "Time-dependent density-functional theory for ultrafast interband excitations", *Phys. Rev. B* **77**, 075204 (2008) [selected also for *Virtual Journal of Ultrafast Science*].
28. V. Turkowski, J.K. Freericks, "Nonequilibrium sum rules for the retarded self-energy of strongly correlated electrons", *Phys. Rev. B* **77**, 205102 (2008) [Editor's suggestion]; Erratum: *Phys. Rev. B* **82**, 119904 (2010).
29. V.M. Loktev, V. Turkowski, "Spin fluctuations and the "strange metal" behavior of a weakly doped antiferromagnet", *Cond. Mat. Phys.* **11**, 483 (2008).
30. V.M. Loktev, V. Turkowski, "Spectral properties of a doped antiferromagnet with pairing correlations", *Jour. of Low Temp. Phys.* **154**, 117 (2009).
31. V.M. Loktev, V. Turkowski, "Suppression of the superconducting T_c in doped graphene due to thermal fluctuations of the order parameter", *Phys. Rev. B* **79**, 233402 (2009) [selected also for *Virtual Journal for Nanoscience and Technology*].
32. V. Turkowski, A. Leonardo, C.A. Ullrich, "Time-dependent density-functional theory approach for exciton binding energies", *Phys. Rev. B* **79**, 233201 (2009).
33. V.M. Loktev, V. Turkowski, "Superconducting properties of a boson-exchange model of doped graphene", *Low Temp. Phys.* **35**, 632 (2009).
34. J.K. Freericks, V. Turkowski, "Inhomogeneous spectral moment sum rules for the retarded Green function and self-energy of strongly correlated electrons or ultracold fermionic atoms in optical lattices", *Phys. Rev. B* **80**, 115119 (2009) (Editors's suggestion, selected for *Virtual Journal of Atomic Quantum Fluids*).
35. V.M. Loktev, V. Turkowski, "Superconducting properties of a two-dimensional doped semiconductor", *Low Temp. Phys.* **36**, 1004 (2010).

36. V. Turkowski, A. Kabir, N. Nayyar, and T.S. Rahman, "A DFT+DMFT approach for Nanosystems", *Journ. of Phys.: Cond. Mat. (Fast Track Communication)* **22**, 462202 (2010) (Institute of Physics Select – Editor's Choice).
37. V. Turkowski, C.A. Ullrich, T.S. Rahman, and Michael N. Leuenberger, "Time-dependent density-matrix functional theory for biexcitonic phenomena", *Phys. Rev. B* **82**, 205208 (2010).
38. S. Tenney, W. He, J. Ratliff, S.I. Shah, G. Shafai, V. Turkowski, T.S. Rahman, D. Chen, "CO-induced Diffusion of Ni Atoms to the Surface of Ni-Au Clusters on TiO₂(110)", *Journal of Phys. Chem. C* **115**, 11112 (2011).
39. V.M. Loktev, V. Turkowski, "Possible high-temperature superconductivity in multilayer graphene: can the cuprates be beaten?", *Journ. of Low Temp. Phys.* **164**, 264 (2011).
40. S. Kahle, Zh. Deng, N. Malinowski, Ch. Tonnoir, A. Forment-Aliaga, N. Thontasen, G. Rinke, D. Le, V. Turkowski, T.S. Rahman, S. Rauschenbach, M. Ternes, and K. Kern, "Addressing the Quantum Magnetism of Individual Manganese-12-Acetate Molecular Magnets Anchored at Surfaces", *Nano Letters* **12**, 518 (2012).
41. V. Turkowski, A. Kabir, N. Nayyar and Talat S. Rahman, "Dynamical Mean-Field Theory or Molecules and Nanostructures", *Journal of Chemical Physics* **136**, 114108 (2012).
42. V. Turkowski, S. Babu, D. Le, M. K. Haldar, A. Wagh, Zh. Hu, A. S. Karakoti, A. Gesquiere, B. Law, S. Mallik, T.S. Rahman, M.N. Leuenberger, S. Seal, "Linker-induced anomalous emission of organic molecule-conjugated metal oxide nanoparticles", *ACS Nano* **6**, 4854 (2012).
43. N. Nayyar, V. Turkowski and T.S. Rahman, "Optical Generation of Collective Plasmon Modes in Small Gold Chains Induced by Doping Transition-Metal Impurities", *Phys. Rev. Lett.* **109**, 157404 (2012).
44. J.K. Freericks, V. Turkowski, H.R. Krishnamurthy, and M. Knap, "Spectral moment sum rules for the retarded Green's function and self-energy of the inhomogeneous Bose-Hubbard model in equilibrium and nonequilibrium", *Phys. Rev. A* **87**, 013628 (2013).
45. V. Turkowski, T.S. Rahman, "Nonadiabatic Time-Dependent Spin-Density Functional Theory for strongly correlated systems", *Journ. of Phys.: Cond. Mat.* **26**, 022201 (2013) (Fast Track Communication, Institute of Physics Select – Editor's Choice).
46. V. Turkowski and M.N. Leuenberger, "Time-dependent density-functional theory of Exciton-exciton correlations in the nonlinear optical response", *Phys. Rev. B* **89**, 075309 (2014).
47. T.B. Rawal, V. Turkowski and T.S. Rahman, "Complementary roles of benzylpiperazine and iodine "vapor" in strong enhancement of orange photoluminescence from CuI(111) thin film", *Journ. of Phys.: Cond. Mat.* **26**, 185005 (2014) (Institute of Physics Select – Editor's Choice).
48. A. Ramirez-Torres, V. Turkowski, and T.S. Rahman, "Time-dependent density-matrix functional theory for trion excitations: application to monolayer MoS₂", *Phys. Rev. B* **90**, 085419 (2014).
49. A. Kabir, V. Turkowski, and T.S. Rahman, "A DFT+nonhomogeneous DMFT approach for finite systems", *Journ. of Phys.: Cond. Mat.* **27**, 125601 (2015).
50. A. Kabir, J. Hu, V. Turkowski, R. Wu, R. Camley, T.S. Rahman, "Effect of the structure on magnetic anisotropy of L1₀ FePt nanoparticles", *Phys. Rev. B* **92**, 54424 (2015).

51. P. Patoka, G. Ulrich, A.E. Nguyen, L. Bartels, P.A. Dowben, V. Turkowski, T.S. Rahman, P. Hermann, B. Kästner, A. Hoehl, G. Ulm, and E. Rühl, “Nanoscale plasmonic phenomena in CVD-grown MoS₂ monolayer revealed by ultra-broadband synchrotron radiationbased nano-FTIR spectroscopy and near-field microscopy”, *Optics Express* **24**, 1154 (2016).
52. J. Paul, C. Stevens, C. Liu, P. Dey, C. McIntyre, V. Turkowski, J. Reno, D. Hilton, “Strong quantum coherence between Fermi liquid Mahan excitons”, *Phys. Rev. Lett.* **116**, 157401 (2016).
53. S.R. Acharya, V. Turkowski, and T.S. Rahman, “Towards building the TDDFT theory for strongly correlated materials”. Invited paper for a Special Issue "50th Anniversary of the Kohn-Sham Theory — Advances in Density Functional Theory", *Computation* **4**, 34 (2016).
54. V. Turkowski, T.S. Rahman, “Nonadiabatic exchange-correlation kernel for strongly correlated materials”. *J. Phys.: Condens. Matter* **29**, 455601 (2017).
55. J. Paul, Ch. Stevens, H. Zhang, P. Dey, D. McGinty, S. McGill, R. Smith, J. Reno, D. Karaiskaj, V. Turkowski, I. Perakis, D. Hilton, “Coulomb induced coupling of Landau levels in intrinsic and modulation-doped quantum wells”, *Phys. Rev. B* **95**, 245314 (2017).
56. V. Turkowski, N. Ud Din and T.S. Rahman, “Time-Dependent Density-Functional Theory and Excitons in Bulk and Two-Dimensional Semiconductors”, *Computation* **5**, 39 (2017) (invited review paper to the Special Issue In Memory of Walter Kohn—Advances in Density Functional Theory).
57. K. Kuhnke, V. Turkowski, A. Kabakchiev, T. Lutz, T.S. Rahman, and K. Kern, Pentacene Excitons in Strong Electric Fields, *ChemPhysChem* **19**, 1 (2018).
58. Ch.E. Stevens, J. Paul, T. Cox, P.K. Sahoo, H.R. Gutiérrez, V. Turkowski, D. Semenov, S.A. McGill, M.D. Kapetanakis, I.E. Perakis, D.J. Hilton, D. Karaiskaj, “Biexcitons in monolayer transition metal dichalcogenides tuned by magnetic fields”, *Nature Comm.* **9**, 3720 (2018).
59. K.M. Conley, N. Nayyar, T.P. Rossi, M. Kuisma, V. Turkowski, M.J. Puska, and T.S. Rahman, “Plasmon Excitations in Mixed Metallic Nanoarrays”, *ACS Nano* **13**, 5344 (2019).
60. J. M. Galicia-Hernandez, V. Turkowski, G. Hernandez-Cocoletzi and T.S. Rahman, “Electron correlations and memory effects in ultrafast electron and hole dynamics in VO₂”, *J. Phys.: Condens. Matter* **32**, 20LT01 (2020).
61. K. Conley, N. Nayyar, T.P. Rossi, M. Kuisma, V. Turkowski, M.J. Puska, and T.S. Rahman, "Plasmon excitations in chemically heterogeneous nanoarrays", *Phys. Rev. B* **101**, 235132 (2020).
62. S.R. Acharya, V. Turkowski, G.P. Zhang, and T.S. Rahman, “Ultrafast Electron Correlations and Memory Effects at Work: Femtosecond Demagnetization in Ni”, *Phys. Rev. Lett.* **125**, 017202 (2020).
63. N. Ud Din, T. Jiang, Sh. Gholam-Mirzaei, M. Chini and V. Turkowski, “Electron–electron correlations and structural, spectral and polarization properties of tetragonal BaTiO₃”, *J. Phys.: Condens. Matter* **32**, 475601 (2020).
64. N Ud Din, V. Turkowski and T.S Rahman, “Excited states in hydrogenated single-layer MoS₂“, *J. Phys.: Condens. Matter* **33**, 075201 (2020).

65. H.-T. Chang, A. Guggenmos, S.K. Cushing, Y. Cui, N. Ud Din, S. R. Acharya, I.J. Porter, U. Kleineberg, V. Turkowski, T.S. Rahman, D.M. Neumark, and S.R. Leone, “Electron thermalization and relaxation in laser-heated nickel by few-femtosecond core-level transient absorption spectroscopy”, *Phys. Rev. B* **103**, 064305 (2021).
66. N. Ud Din, V. Turkowski, T.S. Rahman, “Ultrafast charge dynamics and photoluminescence in bilayer MoS₂”, *2D Materials* **8** 025018 (2021).
67. V. Mapara, A. Barua, V. Turkowski, M. Tuan Trinh, C. Stevens, H. Liu, F.A. Nugera, N. Kapuruge, H. Rodriguez Gutierrez, F. Liu, X. Zhu, D. Semenov, S.A. McGill, N. Pradhan, D.J. Hilton, and D. Karaiskaj, “Bright and Dark Exciton Coherent Coupling and Hybridization Enabled by External Magnetic Fields”, *Nano Lett.* **22**, 1680 (2022).
68. V. Turkowski, T.S. Rahman, “Nonadiabatic Exchange-Correlation Potential for Strongly Correlated Materials in the Weak and Strong Interaction Limits”, *Computation* **10**, 77 (2022).
69. V. M. Loktev, V. Turkowski, “On the theory of nonhomogeneous nonequilibrium superconductivity in 2D systems with massless fermions”, *Low Temp. Phys.* **48**, 371 (2022).
70. V. M. Loktev, V. Turkowski, “Nematic superconductivity in a one-dimensional system of massless fermions”, *Low Temp. Phys.* **48**, 943 (2022).
71. N. Nayyar, D. Le, V. Turkowski and T.S. Rahman, “Electron-phonon interaction and ultrafast photoemission from doped monolayer MoS₂”, *Phys. Chem. Chem. Phys.* **24**, 25298 (2022).
72. D. Alam, N. Ud Din, M. Chini, and V. Turkowski, “Electron-electron interactions and high-order harmonics in solids”, *Phys. Rev. B* **106**, 235124 (2022).
73. B. Barman, A.G. Linn, A.L. O’Beirne, J. Holleman, C. Garcia, V. Mapara, J.L. Reno, S.A. McGill, V. Turkowski, D. Karaiskaj, D.J. Hilton, “Superradiant emission in a high-mobility two-dimensional electron gas”, *Journal of Physics: Condensed Matter* **35**, 305302 (2023).
74. J. Shi, V. Turkowski, and T.S. Rahman, “Dark-exciton energy splitting in monolayer WSe₂: Insights from time-dependent density functional theory”, *Phys. Rev. B* **107**, 155431 (2023).
75. J. Shi, D. Le, V. Turkowski, N. Ud Din, T. Jiang, Q. Gu, T.S. Rahman, “Thickness dependence of superconductivity in FeSe films”, *The European Physical Journal Plus* **138**, 1 (2023).
76. E.D. Switzer, X.-G. Zhang, V. Turkowski, T.S. Rahman, “Mapping spin interactions from conductance peak splitting in Coulomb blockade”, *Phys. Rev. B* **108**, 174438 (2023).
77. Y. Yu, V. Turkowski, J.A. Hachtel, A.A. Puzetzy, A.V. Ievlev, N.U. Din, V.R. Iyer, C. Rouleau, T.S. Rahman, D.B. Geohegan, K. Xiao, “Anomalous isotope effect on the optical band renormalization of monolayer transition metal dichalcogenides”, *Science Advances* **10**, eadj0758 (2024).
78. D. Alam, N. Ud Din, M. Chini, and V. Turkowski, “Correlation-induced generation of super-harmonics in the high-order harmonic spectrum of perovskite barium titanate”, submitted to *Physical Review B Letters*.
79. A. Mushtaq, T. Journigan, V. Turkowski, R. Siebenaller, T. Truong, M.Y. Noor, D. Khatri, C. Lantigua, K. Harrison, S. Khondaker, E. Rowe, J. Goldstein, M. Susner, E. Chowdhury, M. Chini, “High-order Harmonic Generation from the van der Waals Layered Crystal of Copper Indium Thiophosphate”, submitted to *Journal of American Chemical Society*.
80. V.M. Loktev, V. Turkowski, “Symmetry and value of the order parameter in 2D nematic superconductors”, submitted to *Ukr. Journ. of Phys.*

Conference proceedings

1. F. Mancini and V. Turkowski, "Spin magnetic susceptibility in the two-layer Hubbard model", *Physica B* **284-288**, 1575 (2000).
2. V.M. Loktev, Yu.G. Pogorelov and V.M. Turkowski, "Fluctuating order parameter in doped cuprate superconductors", *Int. Journ. Mod. Phys. B* **17**, 3607 (2003).
3. J.K. Freericks, V.M. Turkowski, V. Zlatić, "Parallelizing the Keldysh formalism for strongly correlated electrons". In "Proceedings of the 2004 Users Group Conference", IEEE Computer Society, P.7, Los Alamitos, CA (2005).
4. J.K. Freericks, V.M. Turkowski, V. Zlatić, "F-electron spectral function near a quantum critical point", *Physica B* **359-361**, 684 (2005).
5. J.K. Freericks, V.M. Turkowski, V. Zlatić, "Real-time formalism for studying the non-linear response of "smart" materials to an electric field". In "Proceedings of the 2005 Users Group Conference", IEEE Computer Society, P.25, Nashville, TN (2005).
6. J.K. Freericks, V.M. Turkowski, "Steady-state nonequilibrium dynamical mean-field theory and the quantum Boltzmann equation", *Journ. of Phys: Conference Series* **35**, 39 (2006).
7. J.K. Freericks, V.M. Turkowski, and V. Zlatić, "Nonlinear response of strongly correlated materials to large electric fields". In "Proceedings of the HPCMP Users Group Conference 2006", Denver, CO, June 26--29, 2006 (IEEE Computer Society, Los Alamitos, CA, 2006).
8. S. Gholam-Mirzaei, E. Crites, T. Journigan, V. Turkowski, T. Sjaardema, S. Fathpour, and M. Chini, "High Harmonic Generation from Thin-film LiNbO₃", Conference on Lasers and Electro-Optics, OSA Technical Digest, paper JW2F.7 (Optica Publishing Group, 2020).
9. T. Journigan, S. Gholam-Mirzaei, E. Crites, V. Turkowski, T. Sjaardema, S. Fathpour, and M. Chini, "High Harmonic Generation from Thin Film LiNbO₃", Laser Science LW1G, 4 (2020).
10. D. Alam, M. Chini, and V. Turkowski, "Electron Correlations and Memory Effects in High Harmonic Generation from Perovskite BiFeO₃", CLEO (2023, Technical Digest Series (Optica Publishing Group, 2023), paper JW2A.125.
11. C. Cabello, V. Turkowski, M. Chini, "Generation of High-order Harmonics with Tunable Helicity from Monolayer MoS₂", 2023 Conference on Lasers and Electro-Optics (CLEO), PP.1-2 (2023).

Refereed book chapters

1. V.M. Loktev and V. Turkowski, "Superconducting properties of the 2D models with different types of inter-particle coupling", Chapter in "Superconductivity research at the leading edge", Ed. P.S. Lewis (Nova Science Publishers, New York, 2003).
2. V. Turkowski, V.R. Vieira, P.D. Sacramento, "Dynamics and domain growth in quantum spin systems", Chapter in "Strongly Correlated Systems, Coherence and Entanglement", Eds. J.M.P Carmelo, J.M.B Lopes dos Santos, V.R. Vieira and P.D. Sacramento, P. 163 (World Scientific, 2007).

3. V. Turkowski, J.K. Freericks, “Nonequilibrium dynamical mean-field theory of strongly correlated electrons”. Chapter in "Strongly Correlated Systems, Coherence and Entanglement", Eds. J.M.P Carmelo, J.M.B Lopes dos Santos, V.R. Vieira and P.D. Sacramento, P. 187 (World Scientific, 2007).
4. M. Erementchouk, V. Turkowski and M. N. Leuenberger, “Quantum Field Theory of Exciton Correlations and Entanglement in Semiconductor Structures”, Chapter in "Advances in Quantum Field Theory", Ed. S. Ketov, P. 125 (Intech Publisher, Croatia, 2012).

Preprints

1. C.A. Ullrich, V. Turkowski, “Time-dependent density-functional theory for electronic excitations in materials: basics and perspectives”, preprint arXiv:0808.2021 (2008).
2. J.M. Galicia-Hernandez, V. Turkowski, G. Hernandez-Cocolezzi, T.S. Rahman, “Spatially non-homogeneous metallization of VO₂: a TDDFT+ DMFT analysis”, preprint arXiv:2011.14864 (2020).

Book

V. Turkowski, “Dynamical Mean-Field Theory for Strongly Correlated Materials” (Springer, Cham Switzerland, 2021).

Presentations

60 presentations (21 invited, 30 other oral and 9 poster presentations)

Invited talks

March 8, 2023 - APS March Meeting 2023, Las Vegas, NV, March 5-10, 2023

May 16-26, 2022 – Lectures on Dynamical Mean-Field Theory, Chemistry Department, University of Pennsylvania, Philadelphia, PA (zoom presentations due to covid-19 restrictions)

April 29, 2022 - Oak Ridge National Laboratory, Oak Ridge, TN (zoom presentation due to covid-19 restrictions)

September 13, 2021 - Vitor's Conference on Condensed & Other Matters, Lisbon, Portugal (zoom presentation due to covid-19 restrictions)

March 18, 2020 – Department of Physics, South Dakota School of Mines and Technology, Rapid City, SD (zoom presentation due to covid-19 restrictions)

February 4, 2020 – Department of Physics, St. Bonaventure University, St. Bonaventure, NY

March 11, 2019 - 2019 Annual Symposium, Florida Chapter of the AVS Science and Technology

Society, Orlando, FL
August 22, 2018 - XXVII International Materials Research Congress, Cancun, Mexico
April 17, 2018 - Department of Chemistry, UC-Berkeley (Stephen Leone's group)
July 31, 2017 - Joint Nanoscience and Neutron Scattering Users Meeting, Oak Ridge National
Laboratory, Oak Ridge, TN
March 25, 2015 - Department of Physics, University of South Florida
August 13, 2014 - International Conference on Computational Physics 2014, Boston, MA
June 26, 2013 - International Workshop "Advances in Photoreactions: When spin-orbit
coupling, optical excitation and motion of nuclei are of equal importance?",
Telluride, CO
March 3, 2011 - Condensed Matter and Atomic and Molecular Physics Seminar, Physics
Department, University of Central Florida
February 26, 2011 - The 51th Sanibel Symposium, St. Simons Island, GA
October 2010 - Department of Physics and Engineering, Columbia University (presentation
Tony F. Heinz's group)
October 2008 - Department of Physics, University of Missouri, Columbia
April 2008 - Department of Physics, University of Central Florida
January 30, 2008 - Department of Physics and Astronomy, University of Minnesota
September 20, 2006 - Department of Physics and Astronomy, University of Missouri,
Columbia
May 9, 2006 - Physics Department, Rutgers University

Conference presentations

(oral, unless specified)

39. Attosecond Journal Club, Department of Physics, UCF, April 26, 2024
38. Department of Physics, UCF, April 1, 2024
37. APS March Meeting 2024, Minneapolis, MN, March 4-8, 2024.
36. M²QM Meeting, Gainesville, FL, November 7-9, 2023.
35. 8th International Conference on Attosecond Science and Technology ATTO, Orlando, FL,
July 11-15 (2022) (poster).
34. APS March Meeting 2022, Chicago, IL, March 14-18, 2022.
33. APS March Meeting 2019, Boston, MA, March 4-8, 2019.
32. APS March Meeting 2018, Los Angeles, CA, March 5-9, 2018.
31. APS March Meeting 2017, New Orleans, LA, March 13-17, 2017.
30. APS March Meeting 2016, Baltimore, MD, March 14-18, 2016.
29. APS March Meeting 2015, San Antonio, TX, March 2-6, 2015.
28. Science and Technology of 2D Materials, Orlando, FL, August 21-22, 2015 (poster).
27. SETCA-2015, Orlando, FL, May 14-16, 2015
26. APS March Meeting 2014, Denver, CO, March 3-7, 2014.
25. APS March Meeting 2013, Baltimore, MD, March 18-22, 2013.
24. DoE Theoretical Condensed Matter Physics Principal Investigators' Meeting, Rockville,
MD, August 20-22, 2012 (poster).

23. World Fireball Congress, Orlando, FL, June 18-21, 2012.
22. APS March Meeting 2012, Boston, MA, February 27-March 2, 2012.
21. APS March Meeting 2011, Dallas, TX, March 21-25, 2011.
20. Florida Society for Materials Simulation Meeting, University of Central Florida, Orlando, Florida, August 3, 2010.
19. NanoFlorida 2010, Orlando, Florida, September 24, 2010.
18. APS March Meeting 2010, Portland, OR, March 15-19, 2010.
17. The 13th International Conference on vibrations at surfaces VAS13, Orlando, FL, March 10-13, 2010.
16. NanoFlorida 2009, Orlando, FL, September 25-26, 2009.
15. Florida Society for Materials Simulation Meeting, University of Florida, Gainesville, FL, July 28-29, 2009.
14. APS March Meeting 2009, Pittsburgh, PA, March 16-20, 2009.
13. NanoFlorida 2008 Conference, Orlando, FL, September 26-27, 2008.
12. APS March Meeting 2008, New Orleans, LA, March 10-14, 2008.
11. Gordon Research Conference "Time-dependent density functional theory", Colby College, Waterville, ME, July 16-20, 2007 (poster).
10. APS March Meeting 2007, Denver, CO, March 5-9, 2007.
9. 53rd Midwest Solid State Conference, Kansas City, MO, October 7-8, 2006 (poster).
8. APS March Meeting 2006, Baltimore, MD, March 13-17, 2006.
7. APS March Meeting 2005, Los Angeles, CA, March 21-25, 2005
6. International Conference on Theoretical Physics, UNESCO, Paris, France, July 22-27, 2002 (poster).
5. Meeting on Superconductivity and Disorder, Instituto Superior Tecnico, Lisbon, Portugal, February 1-3, 2002.
4. Mini-Workshop on "Electronic and Magnetic Properties of New Materials", Pico d' Anha, Viana do Castelo, Portugal, October 20-22, 2001.
3. European Conference "Transport and Dynamics in Complex Electronic Materials", Porto, Portugal, September 3-7, 2001 (poster).
2. The 22nd International Conference on Low Temperature Physics "LT22", Espoo and Helsinki, Finland, August 4-11, 1999 (poster).
1. European Conference "Physics of Magnetism'99", Poznan, Poland, June 21-25, 1999 (poster).

Grant awarded

Title - Probing strong electronic correlations in ferroelectrics and multiferroics through high-order harmonic spectroscopy and first-principles calculations

PI - M. Chini

Co-PI- V. Turkowski

Total value of award- \$362,000

Amount credited- \$187,000

Percentage credited - 50
Organization - NSF,
Time period - 08/01/2018-07/31/2021
SERVICE

Editorial Board Member: Journal of Physics Communications (IOP, since 2018), Computation (MDPI, since 2018).

Invited Guest Editor: Special Issue “Static and Time-Dependent DFT for strongly correlated materials” (Computation)

Organizing Committee Member: International Meet on Condensed Matter Physics, May 23-25, 2022 in Munich, Germany

Official Nominator: VinFuture Prize

Conference Chair: International Conference on Computational Physics 2014, Boston, MA (two sessions); APS March Meeting 2023, Las Vegas, NV; APS March Meeting 2024 (invited symposium), Minneapolis, MN

Reviewer of the proposals: Department of Energy (since 2019), Swiss Natural Science Foundation (since 2021), Center for Integrated Nanotechnologies (Distinguished Reviewer, Computational Proposals, Los Alamos and Sandia Labs, since 2016)

A member of Search Committee: Physics Department, UCF (served one time, 2018)

PhD Thesis Committee Member: Department of Physics, USF (since 2021)

Graduate Faculty: Department of Physics, UCF (since 2018)

Faculty Cluster Initiative: UCF (since 2018)

Referee: Nature Communications, Physical Review Letters, Physical Review B, Journal of Physics: Condensed Matter, Journal of Materials Chemistry C, Nanoscale, Molecules, Materials, Nanomaterials