

# NICHOLAS J. LAURITA

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Pasadena, CA 91125

## EDUCATION

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<b>Ph.D. Physics and Astronomy</b> Johns Hopkins University	May, 2017 Baltimore, MD
<b>M.A. Physics and Astronomy</b> Johns Hopkins University	May, 2012 Baltimore, MD
<b>B.S. Applied Physics</b> University of South Florida, <i>Summa Cum Laude</i>	May, 2011 Tampa, FL

## EXPERIENCE

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<b>Institute For Quantum Information &amp; Matter, California Institute of Tech.</b> <i>Institute For Quantum Information and Matter Post-doctoral Scholar</i>	Aug. 2017 Pasadena, CA
· Mentor: Dr. David Hsieh	
<b>Institute For Quantum Matter, Johns Hopkins University</b> <i>Graduate Research Assistant</i>	2012 - 2017 Baltimore, MD
· Mentor: Dr. N. Peter Armitage	
· Dissertation: Low Energy Electrodynamics of Quantum Magnets	
<b>Functional Materials Lab, University Of South Florida</b> <i>Undergraduate Research Assistant</i>	2009 - 2011 Tampa, FL
· Mentors: Dr. Hariharan Srikanth and Dr. Casey W. Miller	
· Concentration: Improving the sensitivity of magnetic field sensors based on the giant magnetoimpedance effect via application of magnetic capping layers	

## HONORS AND AWARDS

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<i>Caltech Institute For Quantum Matter and Information Postdoctoral Fellowship</i>	2017 - 2020
<i>ARCS Foundation Dillon Fellowship</i>	2014 - 2015
<i>Rowland Prize for Innovation and Excellence in Teaching</i>	2013 - 2014
<i>ARCS Foundation Fellowship</i>	2013 - 2014
<i>Johns Hopkins University Owen Fellowship</i>	2011 - 2013
<i>The USF Undergraduate Research Scholarship</i>	2011
<i>The USF Undergraduate Research Scholarship</i>	2010
<i>National Science Foundation Computational Physics Scholarship</i>	2010 - 2011
<i>Aboly Foundation Endowed Scholarship</i>	2010
<i>University of South Florida Presidential Scholarship</i>	2007 - 2011
<i>Bright Futures Scholarship</i>	2010

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**LEADERSHIP AND COMMUNITY SERVICE**


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<i>Graduate Student President of the JHU Department of Physics and Astronomy</i>	2013 - 2014
<i>Volunteer of the Graduate Student Outreach Program</i>	2013 - Present
<i>Volunteer of the Physics Department Mentoring Program</i>	2013 - Present
<i>Volunteer of the Adopt-A-Physicist High School Outreach Program</i>	2013

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**TEACHING EXPERIENCE**


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<i>As.171.104.05 Head TA General Physics for Biological Science Majors</i>	Spring 2016
<i>As.171.104.05 Head TA General Physics for Biological Science Majors</i>	Spring 2015
<i>As.171.105.01 Introduction to Classical Mechanics</i>	Fall 2014
<i>As.171.103.08 General Physics: Biology Majors Semester I</i>	Fall 2012
<i>As.171.102.05 General Physics Lab II</i>	Fall 2012
<i>As.171.102.01 General Physics: Science Majors Semester II</i>	Spring 2012
<i>As.173.112.21 General Physics Lab II</i>	Spring 2012
<i>As.171.101.01 General Physics: Science Majors Semester I</i>	Fall 2012
<i>As.173.111.07 General Physics Lab I</i>	Fall 2012

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**PUBLICATIONS**


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14. *Precise determination of the exchange interactions of the quantum spin liquid candidate  $\text{YbMgGaO}_4$*   
Xinshu Zhang, Fahad Mahmood, Joeseoph A. M. Paddison, Marcus Daum, **N. J. Laurita**, Zhiling Dun, Haidong Zhou, N. P. Armitage, Martin Mourigal  
Submitted to PRX (2017).
13. *An asymmetric splitting of an antiferromagnetic resonance via quartic exchange interactions in multiferroic  $h\text{-RMnO}_3$*   
**N. J. Laurita**, Yi Luo, Rongwei Hu, Meixia Wu, S. W. Cheong, O. Tchernyshyov, N. P. Armitage  
Phys Rev. Lett. **119**, 227601 (2017).
12. *Impurities or a neutral Fermi surface? A further examination of the low-energy ac optical conductivity of  $\text{SmB}_6$*   
**N. J. Laurita**, C. M. Morris, S. M. Koohpayeh, W. A. Phelan, T. M. McQueen, N. P. Armitage  
Physica B. doi:<https://doi.org/10.1016/j.physb.2017.09.015> (2017).
11. *Low-energy magnon dynamics and magneto-optics of the skyrmionic Mott insulator  $\text{Cu}_2\text{OSeO}_3$*   
**N. J. Laurita**, G. G. Marcus, B. A. Trump, J. Kindervater, M. B. Stone, T. M. McQueen, C. L. Broholm, N. P. Armitage  
Phys. Rev. B. **95**, 235155 (2017). (Editor's Suggestion)
10. *Anomalous three-dimensional bulk ac conduction within the Kondo gap of  $\text{SmB}_6$  single crystals*  
**N. J. Laurita**, C. M. Morris, S. M. Koohpayeh, P. F. S. Rosa, W. A. Phelan, Z. Fisk, T. M. McQueen, N. P. Armitage  
Phys. Rev. B. **94**, 165154 (2016).

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9. *Inkjet printed wire-grid polarizers for the THz frequency range*  
A Farid, **N. J. Laurita**, B. Tehrani, J. Hester, M. M. Tenteris, N. P. Armitage  
Journal of Infrared, Millimeter, and Terahertz Waves, Doi:10.1007/s10762-016-0330-5, (2016).
  8. *A modified 8f geometry with reduced optical aberrations for improved time domain terahertz spectroscopy*  
**N. J. Laurita**, Bing Cheng, R. Barkhouser, V. A. Neumann, N. P. Armitage  
Journal of Infrared, Millimeter, and Terahertz Waves, doi:10.1007/s10762-016-0281-x, (2016).
  7. *Anomalous gap edge dissipation in disordered superconductors on the brink of localization*  
Bing Cheng, Liang Wu, **N. J. Laurita**, Harkirat Singh, M. Chand, Pratap Raychaudhuri, N. P. Armitage  
Phys. Rev. B. **93**, 180511(R) (2016).
  6. *A measure of monopole inertia in the quantum spin ice  $Yb_2Ti_2O_7$*   
LiDong Pan, **N. J. Laurita**, Kate A. Ross, E Bruce D. Gaulin, N. P. Armitage  
Nat. Physics doi: 10.1038/nphys3608 (2016).
  5. *Reduction of effective terahertz focal spot size by means of nested concentric parabolic reflectors*  
V. A. Neumann, **N. J. Laurita**, LiDong Pan, N. P. Armitage  
AIP Advances **5**, 097203 (2015).
  4. *Singlet-triplet excitations and long range entanglement in the spin-orbit liquid candidate  $FeSc_2S_4$*   
**N. J. Laurita**, J. Deisenhofer, LiDong Pan, C. M. Morris, M. Schmidt, M. Johnsson, V. Tsurkan, A. Loidl, N. P. Armitage  
Phys. Rev. Lett. **114**, 2070201 (2015).
  3. *Enhanced magnetoimpedance effect in Co-based amorphous ribbons coated with carbon nanotubes*  
A. Chaturvedi K. Stojak, **N. J. Laurita**, P. Mukherjee, H. Srikanth, and M. H. Phan  
J Appl. Phys. **111**, 07E507 (2012).
  2. *Enhanced GMI effect and field sensitivity in Co-coated soft ferromagnetic amorphous ribbons*  
**N. J. Laurita**, A. Chaturvedi, C. Bauer, P. Jayathilaka, A. Leary, C. Miller, M.H. Phan, M.E. McHenry, and H. Srikanth  
J. Appl. Phys. **109**, 07C706 (2011).
  1. *Giant magnetoimpedance and field sensitivity in amorphous and nanocrystalline  $(Co_{1-x}Fe_x)_{89}Zr_7B_4$  ( $x=0, 0.025, 0.05, 0.1$ ) ribbons*  
Anurag Chaturvedi, **N. J. Laurita**, Alex Leary, Manh-Huong Phan, Michael E. McHenry, and Hariharan Srikanth  
J. Appl. Phys. **109**, 07B508 (2011).

## INVITED TALKS AND PRESENTATIONS

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16. *Shining Light On Quantum Magnetism*  
**IQIM Seminar**, Caltech, Pasadena, CA, 2017.
15. *Anomalous 3D bulk AC conduction within the Kondo gap of  $SmB_6$  single crystals*  
**Strongly Correlated Electron Symposium**, Prague, Czech Republic, 2017.
14. *Dynamics of  $Ho^{+3}$  magnetism in the multiferroic insulator  $HoMnO_3$  investigated via time domain terahertz spectroscopy*  
**American Physical Society March Meeting**, New Orleans, LA, 2017.
13. *Anomalous 3D bulk AC conduction within the Kondo gap of  $SmB_6$  single crystals*  
**American Physical Society March Meeting**, New Orleans, LA, 2017.
12. *Anomalous 3D bulk AC conduction within the Kondo gap of  $SmB_6$  single crystals*  
**Workshop On f-Electron Materials**, Temple University, Philadelphia, PA, August 2016.

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11. *Examining the low energy electrodynamics of the superconductor-insulator transition in the potential topological superconductor  $Tl_4(Tl_{1-x}Sn_x)Te_3$*   
**American Physical Society March Meeting**, Baltimore, MD, 2016.
  10. *Dynamics of  $Ho^{+3}$  magnetism in the multiferroic insulator  $HoMnO_3$  investigated via time domain terahertz spectroscopy*  
**American Physical Society March Meeting**, Baltimore, MD, 2016.
  9. *Singlet-triplet excitations and long range entanglement in the spin-orbit liquid candidate  $FeSc_2S_4$*   
**Big Ideas In Quantum Materials Workshop**, San Diego, CA, 2015.
  8. *Singlet-triplet excitations and long range entanglement in the spin-orbit liquid candidate  $FeSc_2S_4$*   
**American Physical Society March Meeting**, San Antonio, TX, 2015.
  7. *AC Conductivity Studies of the Potential Topological Kondo Insulator  $SmB_6$*   
**Gordon Research Seminar and Conference**, Mt. Holyoke, MA, 2014.
  6. *Terahertz transmission studies of the topological Kondo insulator candidate  $SmB_6$*   
**American Physical Society March Meeting**, Denver, CO, 2014.
  5. *Impact of field-induced exchange anisotropy on the magnetoimpedance effect in  $FeMn$ /Metglas ribbons bilayer structures*  
**56th Magnetism and Magnetic Materials Conference**, Scottsdale, AZ, 2011.
  4. *Enhanced magnetoimpedance effect in  $Co_{89}Zr_7B_4$  ribbon/ $Ni_{80}Fe_{20}$  bilayer structures*  
**TMS Symposium on Magnetic Materials for Energy Applications**, San Diego, CA, 2011.
  3. *Giant magnetoimpedance in Co-based amorphous ribbons coated with magnetic nanoparticles for biosensing applications*  
**American Physical Society March Meeting**, Dallas, TX, 2011.
  2. *Enhanced low-field magnetoimpedance effect in soft ferromagnetic amorphous ribbons coated with magnetic metals*  
**55th Magnetism and Magnetic Materials Conference**, Atlanta, GA, 2010.
  1. *Phase coexistence and collapse of charge ordering in low dimensional  $(La,Pr)CaMnO_3$*   
**American Physical Society March Meeting**, Portland, OR, 2010.