

Department of Physics

Summary

The Department of Physics was established in 1935. Our mission is “the advancement of Physics through excellence in research and the extension of scientific heritage through education.” Over the years the department has created and nurtured a unique blend of applied and fundamental research to improve our understanding of the world around us and to respond to the needs of our community. Our research efforts are primarily in the areas of acoustics, computational physics, cosmology, Earth and planetary sciences, environmental physics, ion beam physics, geophysics, and materials science (physics.louisiana.edu). The department consists of seven full-time research-oriented faculty, one instructor, four emeritus professors, and approximately 40 undergraduate and graduate students. We offer Bachelor’s of Science (B.S.) and Master’s of Science (M.S.) degrees in Physics. The department has partnered with the School of Geosciences to build an interdisciplinary doctoral program which will focus on research in energy, the environment, and the physics of the Earth.

This report summarizes the professional accomplishments of the research-active physics faculty from 2011 to 2016. Since 2011 the physics faculty have served as Principal or Co-Principal Investigators on 43 research awards totaling \$8,557,150, which, on average, amount to \$178,274 per year per faculty member. Since 2011, we have published 83 peer-reviewed journal articles (1.73 per faculty per year), 11 book chapters, and 20 conference proceedings papers. The expertise of the physics faculty is recognized by invitations to deliver 28 plenary and invited international conference talks and to serve as referees of 44 scientific journals, including *Science* and *Nature*. The faculty also authored and co-authored 25 conference presentations and organized 10 special sessions and meetings. Our faculty pride themselves in educating future scientists and teachers; we served as chairs and co-chairs on 19 M.S. Thesis and Doctoral dissertation committees.

Publications, Presentations, Editorships, and Talks

Refereed Journal Papers (Published)

1. **J.B. Dent**, B. Dutta, J.L. Newstead, and L.E. Strigari, "Effective field theory treatment of the neutrino background in direct dark matter detection experiments", *Phys.Rev. D* 98 (2016) no.7, 075018, arXiv:1602.05300.
2. **J.B. Dent**, L.M. Krauss, J.L. Newstead, and S. Sabharwal. "A General Analysis of Direct Dark Matter Detection: From Microphysics to Observational Signatures," *Physical Review D* 92 (2015) 063515, arXiv:1505.03117.
3. N.F. Bell, Y. Cai, **J.B. Dent**, R.K. Leane, and T.J. Weiler, "Dark matter at the LHC: EFTs and gauge invariance," *Physical Review*, (2015), D 92 053008, arXiv:1503.07874.
4. **J.B. Dent**. "Review of the possible role of self-ordering scalar fields in the production of a stochastic background of gravitational waves," *International Journal of Modern Physics*, (2015), D 24 04, 1541005.
5. R.S. Fontenot, K.N. Bhat, C.A. Owens, **W.A. Hollerman**, and M.D. Aggarwal. Effects of added dibutyl phosphate on the luminescent properties of europium tetrakis dibenzoylmethide triethylammonium. *Journal of Luminescence*, (2015), 158, 428-434.
6. R.S. Fontenot, C.A. Owens, K.N. Bhat, **W.A. Hollerman**, and M.D. Aggarwal. Magnesium tetrakis dibenzoylmethide triethylammonium: A novel blue emitting phosphor. *Materials Letters*, **146**, (2015) pp. 9-11.
7. K.N. Bhat, R.S. Fontenot, **W.A. Hollerman**, and M.D. Aggarwal. Incorporating Strongly Triboluminescent Europium Tetrakis Dibenzoylmethide Triethylammonium and Phthalocyanine. *International Journal of Chemistry*, (2015), 4 (2), 87-93.
8. K.N. Bhat, R.S. Fontenot, **W.A. Hollerman**, and M.D. Aggarwal. Incorporating Strongly Triboluminescent Europium Tetrakis Dibenzoylmethide Triethylammonium and Phthalocyanine. *International Journal of Chemistry*, (2015), 4 (2), 87-93.
9. R.S. Fontenot, **W.A. Hollerman**, K.N. Bhat, and M.D. Aggarwal. Real Time Brake Pad System: A New Novel Application of Triboluminescent Materials. *International Journal of Chemistry*, (2015), 4 (4), 336-339.
10. J. F. Justo, **G. Morra** and D. A. Yuen. Viscosity hills in the lower-mantle: The role of iron spin transition. *Earth and Planetary Science Letters*, (2015), 421, 20-26.
11. N. J. Jones, **G. Petculescu**, M. Wun-Fogle, J. B. Restorff, A. E. Clark, K. B. Hathaway, D. Schlagel, and T. A. Lograsso. "Effects of Zn Additions to Highly Magnetoelastic FeGa Alloys." *Journal of Applied Physics*, (2015), 117, 17A913.
12. T. A. Lograsso, N. J. Jones, D. L. Schlagel, **G. Petculescu**, M. Wun-Fogle, J.B. Restorff, A. E. Clark, and K. B. Hathaway. "Rhombohedral Magnetostriction in Dilute Iron (Co) alloys." *Journal of Applied Physics*, (2015), 117, 17E710.
13. Dyer, S., Pierpoint, C., **Sidorovskaia**, N. ASVs for Passive Acoustic Monitoring: Keeping Track of Marine Wildlife in the Gulf Post-Deepwater Horizon. *Sea Technology*, October (2015), 15-18.
14. Shangxu Wang, Sanyi Yuan, Ming Ma, **R. Zhang**, Chunmei Luo. Wavelet phase estimation using ant colony optimization algorithm. *Journal of Applied Geophysics*, (2015), 122, 159-266.

15. **Zhang, R.**, Donald Vasco, Thomas M. Daley and William Harbert. Characterization of a fracture zone using seismic attributes at the In Salah CO₂ storage project. *Interpretation*, (2015), 3 (2), SM37-SM46.
16. **Zhang, R.**, Donald Vasco and Thomas M. Daley. Application of sparse layer inversion on 3D seismic at the In Salah CO₂ storage project for improved thin-bed resolution. *Interpretation*, 3(3), SS65-SS71.
17. **Zhang, R.**, Donald Vasco and Thomas M. Daley. Study of seismic diffraction wave caused by a fracture zone at InSalah CO₂ storage project. *International Journal of Greenhouse Gas Control*, (2015), 52, 75-86.
18. V. Faraoni, **J.B. Dent**, and E.N. Saridakis. "Covariantizing the interaction between dark energy and dark matter," *Physical Review*, **D90** (2014) 6, 063510, arXiv:1405.7288 [gr-qc].
19. **J.B. Dent**, L.M. Krauss, and H. Mathur. "Killing the Straw Man: Does BICEP Prove A. Akintunde and **A. Petculescu**. "Infrasonic attenuation in the upper mesosphere-lower thermosphere: A comparison between Navier-Stokes and Burnett predictions." *Journal of the Acoustical Society of America*, (2014), **136**, 1483-1486.
20. **A. Petculescu** and R. Kruse. "Predicting the characteristics of thunder on Titan: A framework to assess the detectability of lightning by acoustic sensing." *J. Geophys. Res. Planets*, (2014), **119**, pp. 167-2176.
21. A. C. Raga, J. Cauto, A. Rodríguez-Gonzalez, and **A. Petculescu**. "The strong/weak shock transition in cylindrical and planar blast waves." *Rev. Mexicana Astron. Astrofísica*, (2014), **50**, 145-150.
22. Inflation at the GUT Scale?" *Physics Letters*, **B736** (2014) 305, arXiv:1403.5166 [astro-ph.CO].
23. R.S. Fontenot, **W.A. Hollerman**, K.N. Bhat, M.D. Aggarwal, and B.G. Penn. Incorporating Strongly Triboluminescent Europium Dibenzoylmethide Triethylammonium into Simple Polymers. *Polymer Journal*, (2014), **46** (2), 111-116.
24. K.N. Bhat, R.S. Fontenot, R. Surabhi, **W.A. Hollerman**, M.D. Aggarwal, and T.R. Alapati. Measurement of the Triboluminescent Properties for Europium and Samarium Tetrakis Dibenzoylmethide Triethylammonium. *Electronic Materials Letters*, (2014), **10** (6), 1149-1153.
25. R.S. Fontenot, K.N. Bhat, C.A. Owens, **W.A. Hollerman**, and M.D. Aggarwal. Effects of added dibutyl phosphate on the luminescent properties of europium tetrakis dibenzoylmethide triethylammonium. *Journal of Luminescence, Electronic Publication*, <http://dx.doi.org/10.1016/j.jlumin.2014.10.026>.
26. Fourel, Loic, Saskia Goes, and **G. Morra**. "The role of elasticity in slab bending." *Geochemistry, Geophysics, Geosystems*, (2014), **15.11**, 4507-4525.
27. N. P. Butterworth, R. D. Muller, L. A. Quevedo, J.M.B. O'Connor, K.C. Hoernle, **G. Morra**. Pacific Plate slab pull and intraplate deformation in the early Cenozoic, *Solid Earth Discussions*, 2014, **6**, 1-45, (2014), doi:10.5194/sed-6-1-2014.
28. K.N. Bhat, R.S. Fontenot, **W.A. Hollerman**, T.R. Alapati, and M.D. Aggarwal. Effects of Adding Caffeine on the Triboluminescent Properties of Europium Dibenzoylmethide Triethylammonium. *International Journal of Chemistry*, (2013), 2: 165-172.
29. R.S. Fontenot, **W.A. Hollerman**, K.N. Bhat, and M.D. Aggarwal. Effects of Added Uranium on the Triboluminescent Properties of Europium Dibenzoylmethide Triethylammonium. *Journal of Luminescence*, (2013), **134** (2), 477-482.

30. R.S. Fontenot, K.N. Bhat, **W.A. Hollerman**, and M.D. Aggarwal. Effects of Dimethyl Methylphosphonate on the Triboluminescent Properties of Europium Dibenzoylmethide Triethylammonium. *Sensors & Transducers Journal*, (2013), **149** (2), 109-115.
31. Chiquet, R.A., Ma, B., Ackleh, A.S, Pal, N., and **Sidorovskaia, N.** “Demographic analysis of sperm whales using matrix population models.” *Ecological Modelling*, (2013), **248**, pp. 71– 79.
32. R.S. Fontenot, **W.A. Hollerman**, K.N. Bhat, and M.D. Aggarwal. Effects of Crystallite Grain Size on the Triboluminescent Emission for EuD₄TEA. *Advanced Materials Letters*, (2013), **4** (8), 605-609.
33. L. Kobakhidze, C. Guidry, **W.A. Hollerman**, and R. Fontenot. Detecting Mechanoluminescence From ZnS:Mn Powder Using a High Speed Camera. *IEEE Sensors Journal*, (2013), **13**(8), 3053-3059.
34. R.S. Fontenot, **W.A. Hollerman**, K.N. Bhat, S.W. Allison, and M.D. Aggarwal. Luminescent Properties of Lanthanide Dibenzoylmethide Triethylammonium Compounds. *Journal of Theoretical and Applied Physics*, (2013), **7**:30.
35. R.S. Fontenot, K.N. Bhat, **W.A. Hollerman**, T.R. Alapatia, and M.D. Aggarwal. Triboluminescent Properties of Dysprosium Doped Europium Dibenzoylmethide Triethylammonium. *ECS Journal of Solid State Science and Technology*, (2013), **2**(9), 384-388.
36. **J.B. Dent**, S. Dutta, E.N. Saridakis, and J.-Q. Xia. "Cosmology with non-minimal derivative couplings: Perturbation analysis and observational constraints," *JCAP* (2013), **1311** 058, arXiv:1309.4746.
37. **J.B. Dent**, L.M. Krauss, S. Sabharwal, and T. Vachaspati. "Damping of Primordial Gravitational Waves from Generalized Sources," *Physical Review D*, (2013), **{88}** 084008 arXiv:1307.7571.
38. J.L. Newstead, T.D. Jacques, L.M. Krauss, **J.B. Dent**, and F. Ferrer. "The Scientific Reach of Multi-Ton Scale Dark Matter Direct Detection Experiments", *Physical Review D*, (2013), **{88}** 076011 arXiv:1306.3244.
39. **G. Morra**, D. Muller, L. Quevedo, M. Seton. Organization of the tectonic plates in the last 200 Myrs. *Earth and Planetary Science Letters*, 2013, **Vol. 373**, P 93–101.
40. Y. van Dinther, Taras V. Gerya, P. Martin Mai, Luis A. Dalguer, **G. Morra**. The seismic cycle at subduction thrusts: insights from coupled seismo-thermo-mechanical geodynamic models, *Journal of Geophysical Research*, **118** (2013) 6183-6202, DOI: 10.1002/2013JB010380.
41. **G. Morra**, R. Geller, S. T. Grilli, S.-I. Karato, S. King, S.-M. Lee, P. Tackley, and D. A. Yuen. Subduction Dynamics and Seismic Hazards. Submitted to *EOS Transactions of the American Geophysical Union*, (2013), **Vol. 94** (13), P 125–126, doi: 10.1002/2013EO130008.
42. **A. Petculescu** and R. M. Lueptow. Quantitative acoustic relaxational spectroscopy for real-time monitoring of natural gas: A perspective on its potential. *Sensors and Actuators - B: Chemical* (2013), **169**, pp. 121-127.
43. L.M. Krauss and **J.B. Dent**. "Higgs Seesaw Mechanism as a Source for Dark Energy," *Physical Review D*, (2013), **{111}** 061802, arXiv:1306.3239.
44. S. De, **J.B. Dent**, and L.M. Krauss. "CDM and baryons as distinct fluids in a linear approximation for the growth of structure," *Physical Review D*, (2013), **{88}** 023510, arXiv:1302.0941.

45. N.F. Bell, **J.B. Dent**, A.J. Galea, T.D. Jacques, L.M. Krauss, and T.J. Weiler. "Searching for Dark Matter at the LHC with a Mono-Z," *Physical Review D*, (2012), {**86**} 096011, arXiv:1209.0231.
46. **J.B. Dent**, D.A. Easson, and H. Tashiro. "Cosmological Constraints from CMB distortion," *Physical Review D*, (2012), {**86**} 023514, arXiv:1202.6066.
47. S. Basilakos, **J.B. Dent**, S. Dutta, L. Perivolaropoulos, and M. Plionis. "Looking beyond Einstein's gravity with the evolution of linear bias," *Physical Review D*, (2012), {**85**} 123501.
48. S.-H. Chen and **J.B. Dent**. "A new approach to the vacuum of inflationary models," *Classical and Quantum Gravity*, (2012), {**29**} 085002, arXiv:1012.4811.
49. K.N. Bhat, R.S. Fontenot, **W.A. Hollerman**, and M.D. Aggarwal. Triboluminescent Research Review of Europium Dibenzoylmethide Triethylammonium (EuD₄TEA) and Related Materials. *International Journal of Chemistry*, (2012), **1**(1), 100-118.
50. R.S. Fontenot, K.N. Bhat, **W.A. Hollerman**, M.D. Aggarwal, and K.M. Nguyen. Comparison of the triboluminescent yield and decay time for europium dibenzoylmethide triethylammonium synthesized using different solvent. *CrystEngComm*, (2012), **14**(4), 1382-1386.
51. R.S. Fontenot, **W.A. Hollerman**, M.D. Aggarwal, K.N. Bhat, and S.M. Goedeke. A Versatile Low-Cost Laboratory Apparatus for Testing Triboluminescent Material. *Measurement*, (2012), **45**(3), 431-436.
52. R.S. Fontenot, K.N. Bhat, **W.A. Hollerman**, and M.D. Aggarwal. Innovative Triboluminescence Study of Multivitamin Doped Europium Tetrakis. *Crystal Research and Technology*, (2012), **45**(5), 573-578, Paper shown on journal cover.
53. **W.A. Hollerman**, R.S. Fontenot, K.N. Bhat, M.D. Aggarwal, C.J. Guidry, and K.M. Nguyen. Comparison of Triboluminescent Emission Yields for Twenty-Seven Luminescent Materials. *Optical Materials*, (2012), **34** (9), 1517-1521.
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55. R.S. Fontenot, **W.A. Hollerman**, K.N. Bhat, and M.D. Aggarwal. Comparison of Triboluminescent Light Yield Versus Impact Energy for Europium Tetrakis and ZnS:Mn Powders. *Journal of Theoretical and Applied Physics*, (2012), **6**, 15.
56. **W.A. Hollerman**, R.S. Fontenot, K.N. Bhat, and M.D. Aggarwal. Measuring the Process Variability in Triboluminescence Emission Yield for EuD₄TEA. *Metallurgical and Materials Transactions A*, (2012), **43**(11), 4200-4203.
57. R.S. Fontenot, K.N. Bhat, **W.A. Hollerman**, and M.D. Aggarwal. Triboluminescent Materials for Smart Sensor. *Materials Today*, (2011), **14**, 292-293.
58. R.S. Fontenot and **W.A. Hollerman**. Measuring Triboluminescence From ZnS:Mn Produced by Ballistic Impacts. *Journal of Instrumentation*, (2011), **6**, T04001
59. **G. Morra**, D. A. Yuen and S.-M. Lee. Subduction: From Mantle Flow to Great Earthquakes. *EOS Transactions of the American Geophysical Union*, (2012), **Vol. 93** (45), P 457, doi:2012EO450007.
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61. L. Quevedo, **G. Morra**, R. D. Mueller. Global Paleo-Lithospheric Models for Geodynamical Analysis of Plate Reconstructions. *Physics of the Earth and Planetary Interiors*, (2012), **Vol. 212–3**, pp. 106–13.
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63. Y. van Dinther, **G. Morra**, F. Funiciello, F. Rossetti, C. Faccenna. Exhumation and subduction erosion in orogenic crustal wedges: Insights from numerical models, *Geochemistry, Geophysics, Geosystems*, (2012), **Vol. 13**, Q06003, doi:10.1029/2011GC004011.
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65. F. A. Capitanio and **G. Morra**. The bending mechanics in a dynamic subduction system: Constraints from numerical modelling and global compilation analysis. *Tectonophysics*, 2012, **Vol. 522–3**, pp. 224–234, doi:10.1016/j.tecto.(2011).12.003.
66. **A. Petculescu** and P. Achi. “A model for the vertical sound speed and absorption profiles in Titan’s atmosphere based on Cassini-Huygens data.” *J. Acoust. Soc. Am.* (2012), **131**, pp. 3671-3679.
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68. **G. Petculescu**, P. K. Lambert, A. E. Clark, K. B. Hathaway, Q. Xing, T. A. Lograsso, J. B. Restorff, and M. Wun-Fogle. “Temperature dependence of magnetoelastic properties of Fe_{100-x}Si_x (5<x<20).” *J. Appl. Phys.* (2012), **111**, 07A921.
69. **G. Petculescu**, K. L. Ledet, M. Huang, T. A. Lograsso, Y. N. Zhang, R. Q. Wu, M. Wun-Fogle, J. B. Restorff, A. E. Clark, and K. B. Hathaway. “Magnetostriction, elasticity, and D03 phase stability in Fe-Ga and Fe-Ga-Ge alloys.” *J. Appl. Phys.*, (2011), **109**, 07A904.
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71. Ackleh, A., Ioup, G.E., Ioup, J.W., Ma, B., Newcomb, J., Pal, N., **Sidorovskaia, N.**, and Tiemann, C. “Assessing the Deepwater Horizon oil spill impact on marine mammal population through acoustics: Endangered sperm whales.” *J. Acoust. Soc. Am.*, (2012), **131** (3), pp. 2306-2314.
72. N.F. Bell, **J.B. Dent**, A.J. Galea, T.D. Jacques, L.M. Krauss, and T.J. Weiler. "W/Z Bremsstrahlung as the Dominant Annihilation Channel for Dark Matter, Revisited." *Physical Letters B*, (2011), **{706}** 6-12 arXiv:1104.3823.
73. N.F. Bell, **J.B. Dent**, T.D. Jacques, and T.J. Weiler. "Dark Matter Annihilation Signatures from Electroweak Bremsstrahlung," *Physical Review D*, (2011), **{84}** 103517, arXiv:1101.3357.
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75. Y.-Zen Chu, **J.B. Dent**, and T. Vachaspati. "Magnetic Helicity in Sphaleron Debris," *Physical Review D*, (2011), {**83**} 123530, arXiv:1105.3744.
76. Y.-F. Cai, **J.B. Dent**, and D.A. Easson. "Warm DBI Inflation," *Physical Review D*, (2011), {**83**} 101301 arXiv:1011.4074.
77. **J.B. Dent**, S. Dutta, and E.N. Saridakis. "f(T) gravity mimicking dynamical dark energy. Background and perturbation analysis." *JCAP* (2011), {**2011**} 009, arXiv:1010.2215.
78. N.F. Bell, **J.B. Dent**, T.D. Jacques, and T.J. Weiler. "W/Z Bremsstrahlung as the Dominant Annihilation Channel for Dark Matter," *Physical Review D*, (2011), {**83**} 013001, arXiv:1009.2584.
79. R.S. Fontenot, **W.A. Hollerman**, and S.M. Goedeke. Initial Evidence of a Triboluminescent Wavelength Shift for ZnS:Mn Caused by Ballistic Impacts. *Materials Letters*, (2011), **65**, 1108-1110.
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82. **J.B. Dent**, T.W. Kephart, and S. Nandi, "Natural fermion mass hierarchy and mixings in family unification", *Physical Letters B*, (2011), {**697**} 367-369, arXiv:0908.3915.
83. Tiemann, Chris O., Jaffe, Jules S., Roberts, Paul L. D., **Sidorovskaia, N.**, Ioup, George E., Ioup, Juliette W., Ekimov, Alexander, Lehman, Sean K. "Signal and image processing techniques as applied to animal bioacoustics problems." *Acoustics Today*, (2011), **7** (3), pp. 35-43. (**invited featured article**)

Refereed Journal Papers (Accepted)

84. Ackleh, A.S., Chiquet, R.A., Ma, B., Tang, T., Caswell, H., Veprauskas, A., **Sidorovskaia, N.** "Analysis of Lethal and Sublethal Impacts of Environmental Disasters on Sperm Whales Using Stochastic Modeling," *Ecotoxicology* (in review, submitted November 2016).
85. **Sidorovskaia, N.A.** and Li, K. "Decadal evolution of the Northern Gulf of Mexico soundscapes," *Proc. of Meetings on Acoustics* (accepted, to be published in 2017)

Book Chapters

86. D.O. Olawale, O. Okoli, R.S. Fontenot, and **W.A. Hollerman**, Editors, *Triboluminescence - Theory, Synthesis, and Applications*, Springer International Publishers, Switzerland, DOI: 10.1007/978-3-319-38842-7_1, (2016). Co-author of four of fourteen chapters for this book.
87. **G. Morra**, D. A. Yuen, S.M. Lee, S. D. King. (2015). Preface. The Impact of Subduction Dynamics on Mantle Flow, Continental Tectonics and Seismic Hazard, in *AGU Geophysical Monograph Series, Subduction Dynamics: From Mantle Flow to Mega Disasters*, Eds. Morra, Yuen, King, Lee, and Stein, Wiley, **211, 1**.
88. **G. Morra**, D. A. Yuen, S.M. Lee, S. Zhang. (2015). Cenozoic Volcanism in Eastern Asia from partial melts in the transition zone, in *AGU Geophysical Monograph Series*, Eds. Morra, Yuen, King, Lee, and Stein, Wiley, **211, 97**.

89. N. J. Jones, **G. Petculescu**, M. Wun-Fogle, J. B. Restorff, A. E. Clark, K. B. Hathaway, D. Schlagel, and T. A. Lograsso. (2015). "Effects of Zn Additions to Highly Magnetoelastic FeGa Alloys" in *Journal of Applied Physics*, J. Appl. Phys. 117, 17A913.
90. Ross S. Fontenot, Kamala N. Bhat, **W.A. Hollerman**, and Mohan D Aggarwal. Highly Triboluminescent Europium Dibenzoylmethide Triethylammonium. Chapter 3, *Europium: Synthesis, Characteristics and Potential Applications*. Edited by Mohamed Said Attia Moustafa. Nova Publishers, Approved for publication, 2013.
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92. **G. Petculescu**, R. Q. Wu and R. McQueeney. "Magnetoelasticity of bcc Fe-Ga Alloys." *Handbook of Magnetic Materials*, Vol. 20 edited by K. H. J. Buschow, North Holland, 2012, pp.123-226.
93. Ioup, G.E., **Sidorovskaia, N.A.**, et al. "Environmental Acoustic Recording System (EARS) in the Gulf of Mexico," in *Listening in the Ocean: New Discoveries and Insights on Marine Life from Autonomous Passive Acoustic Recorders*. Whitlow Au (Ed.), Springer (submitted to the editor, under review).
94. Donald Vasco, Thomas Daley, **R. Zhang**. Caprock Integrity in Geological Caprock Storage. *AGU Monography*, Section 3.1 (in press).

Conference Proceeding Papers

95. Thomas M Daley, Curtis M Oldenburg, Andrea Borgia, **R. Zhang**, Christine Doughty, Yoojin Jung, Bilgin Altundas, Nikita Chugunov and T S Ramakrishnan, 2016, Enhanced characterization of faults and fractures at EGS sites by CO₂ injection coupled with active seismic monitoring, pressure-transient testing, and well logging, AGU fall meeting H130-05.
96. Warren Wood, Taylor Runyan and **R. Zhang**, 2016, A machine learning approach to quantifying geologic similarities between sites of gas hydrate accumulation, AGU fall meeting OS51B.
97. **R. Zhang**, Kui Zhang and Jude E. Alekhue, 2016, Depth domain seismic reflectivity inversion with compressed sensing technique, SEG 86th Annual meeting Dallas.
98. **R. Zhang** and Sergey Fomel, 2016, Application of predictive painting to well-log data interpolation and seismic inversion, SEG 86th Annual meeting Dallas.
99. **R. Zhang** and Sergey Fomel, 2016, Time-variant wavelet extraction with spectral decomposition for seismic inversion, SEG 86th Annual meeting Dallas.
100. Parvaneh Karimi, Sergey Fomel and **R. Zhang**, 2016, Time-lapse image registration using the stratigraphic-coordinate system, SEG 86th Annual meeting Dallas.
101. Curtis M. Oldenburg, Thomas M. Daley, Andrea Borgia, **R. Zhang**, Christine Doughty, T.S. Ramakrishnan, Bilgin Altundas, Nikita Chugunov, 2016, Preliminary simulations of carbon dioxide injection and geophysical monitoring to improve imaging and characterization of faults and fractures at EGS sites, Stanford Geothermal Workshop 41 Annual Meeting.

102. **G. Morra**, David A Yuen, Joao F Justo, Renata Wentzcovitch. Upwelling through the iron spin transition in the lower mantle and a volatile rich upper mantle transition zone. Presented at the Central Asian Tectonics and Western Pacific Geodynamics International Conference in Wuhan, Hubei, China, June 6, 2015. <https://www.esci.umn.edu/Spring-2015-Seminar-Series>, April 2, 2015
103. Andrea Borgia, Curtis M. Oldenburg, **R. Zhang** and T. S. Ramakrishnan. TOUGH Symposium 2015, Lawrence Berkeley National Laboratory.
104. **R. Zhang**, Bo Zhang. Seismic reflectivity attributes. SEG 835nd Annual meeting Houston, 2015.
105. **R. Zhang**, Donald Wyman Vasco, Thomas M. Daley and William Harbert. Characterization of a fracture zone using seismic attributes at the In Salah CO₂ storage project, SEG 835nd Annual meeting Houston, 2015.
106. **Zhang, R.**, Thomas Daley, and Donald Vasco. Study of seismic diffraction wave caused by a fracture zone at In Salah CO₂ storage project. Engineering Mechanism Institute Conference 2015 Stanford University.
107. **G. Morra** and Natalia Sidorovskaia. Acoustic Detection and Numerical Models of Landslide Induced Tsunamis In The Gulf Of Mexico. Presented at the GSA South East, - 64th Annual Meeting, Paper No. 37-8, March 20, 2015, <https://gsa.confex.com/gsa/2015SE/webprogram/Paper253914.html>.
108. **Sidorovskaia, N.**, Griffin, S., Kusel, E., and Richter, C. (2015). Proc. LADC-GEMM 2015 Gulf of Mexico Experiment. Part II: Recovery Cruise. Lafayette, LA (LADC-GEMM), p. 24.
109. **W.A. Hollerman**, R.S. Fontenot, K.N. Bhat, M.D. Aggarwal, C.J. Guidry, and K.M. Nguyen. Review of Triboluminescence Impact Research at Projectile Speeds of 1 m/s to 6 km/s. *Procedia Engineering*, 58, pp. 392-400, 2013.
110. **W.A. Hollerman**, R.S. Fontenot, B.M. Broussard, S.M. Goedeke, and C.J. Guidry. Developing Impact Marking Projectiles Using Triboluminescent Materials. Abstract Published in the Bulletin of the American Physical Society, 17th APS Topical Conference on Shock Compression of Condensed Matter (Chicago, IL), <http://meetings.aps.org/link/BAPS.2011.SHOCK.Y4.2> (2011).
111. **G. Morra**, L. E. Quevedo, D. A. Yuen, P. Chatelain, 2011. Ascent of Bubbles in Magma Conduits Using Boundary Elements and Particle, in *Procedia Computer Science*, Vol. 4, pp. 1554-1562, doi: 10.1016/j.procs.2011.04.168.
112. **A. Petculescu**. “A physical model for predicting the sound speed and attenuation coefficient in Titan’s atmosphere based on Cassini-Huygens data.” Proceedings of Meetings on Acoustics, ICA-ASA 2013.
113. Malekhanov, A.I., **Sidorovskaia, N.A.**, Khil’ko, A.I., Borodina, E.L., Smirnov, I.P. (2013) “Formation of stable space-time structures at propagation of broadband pulses in oceanic waveguides and their destruction at randomly distributed inhomogeneities.” Proceedings of the XIV L.M. Brekhovskikh’s conference, Москва, ГЕОС 2013 г., pp. 384-387 [In Russian with summary translated in English].
114. Сидоровская, Н.А., Ioup, G.E., Ioup, J.W., Tashmukhambetov, A.M., Ekimov, A.E. (2011). “Использование пассивных акустических методов для изучения влияния индустриальной деятельности человека на морскую мегафауну,” [**N.A. Sidorovskaia**, G.E. Ioup, J.W. Ioup, A.M. Tashmukhambetov, A.E. Ekimov, “Using passive acoustic methods to study anthropogenic noise impact on oceanic

megafauna,"] In "Ocean acoustics," Proceedings of the XIII th L.M. Brekhovskikh's conference , Москва, ГЕОС 2011 г., pp. 270-276 [In Russian with summary translated in English]

Plenary and Keynote Presentations

- **J.B. Dent.** "New particle searches confronting the first LHC Run-2 data," held at the IPMU in Kashiwanoha Japan in September 2015.
- **G. Morra,** David A Yuen, Sang Mook Lee. Computational Methods for Volcanology: Application to Central Asian Volcanism. Invited 1 hour talk at the Institute of Geodesy and Geophysics. Chinese Academy of Sciences, Wuhan, Hubei, China, June 11, 2015.
- **G. Morra.** Subduction, megathrusts and underwater landslides: What the 2011 Japanese tsunami has taught us about tsunami hazard. South Western Louisiana Geophysical Society, 2014.

Invited Conference / Workshop Talks

James B. Dent

- J.B. Dent: Mitchell Institute Workshop on Collider, Dark Matter, and Neutrino Physics, Texas A&M University, May 2016
- J.B. Dent: Invited Speaker CETUP* workshop on Dark Matter, Lead, SD, July 2016
- J.B. Dent: Speaker at COSMOS International Conference, University of Michigan, August 2016
- J.B. Dent: Invited Speaker, Effective Field Theories as Discovery Tools, Mainz Institute of Theoretical Physics, Mainz, Germany, September 2016
- Fermilab meeting on Dark Matter at a Future 100TeV Collider, December 2015 at Fermilab in Batavia, Illinois.
- Coherent Neutrino Scattering Workshop held at Texas A&M University in November 2015.
- Mitchell Institute's Dark Matter Workshop held at Texas A&M University in May of 2015.
- Aspects of Inflation Workshop, Texas A&M University, April 2011.

William A. Hollerman

- *Using Luminescent Materials as the Active Element for Radiation Sensors*, SPIE Defense + Commercial Sensing, Conference 9838, Space Payload Technologies for Dual Military-Civil Operations, Baltimore, Maryland, April 19, 2016.
- *Using Luminescent Materials as the Active Element for Radiation Sensors*, Naval Surface Warfare Center Carderock Division, West Bethesda, Maryland, April 20, 2016.
- *Research Opportunities at the Louisiana Accelerator Center*, Naval Surface Warfare Center Carderock Division, West Bethesda, Maryland, May 25, 2016.
- *Collaborations on EuD₄TEA Research*, Army Research Laboratory, Sensors and Electron Devices (SEDD), Adelphi, Maryland, July 26, 2016.

- *Using Luminescent Materials for Space Radiation Sensors*, International Conference on the Application of Accelerators in Research & Industry, Fort Worth, TX, November 3, 2016.
- Triboluminescent Materials: Uses in Smart Sensors and Technology, 8th Energy, Materials, and Nanotechnology (EMN) Meeting, Orlando, FL, November 22, 2014
- Triboluminescence and its Properties. NASA Marshall Space Flight Center Technology Transfer Office, Huntsville, AL, August 16, 2012.
- Inexpensive Student-Based Payload Projects, NASA Academy of Aerospace Quality (AAQ) Mini-Workshop, Port Canaveral, Florida, March 27, 2012.
- Overview of the Student-Related Payload Projects at UL Lafayette, Next Generation Suborbital Researchers Conference, University of Central Florida, Orlando, FL, March 2, 2011.

John J. Matese

- “Searching the Catalogue of Cometary Orbits for Evidence of an Impulsive Component of Oort Cloud Flux.” Lille Observatory Workshop, “Dynamics and Formation of the Oort Cloud,” pp. 27-30 September (2011); Lille, France.

Gabriele Morra

- University of Lausanne - special workshop for the 50 years of Yuri Podlatchikov, 2014.
- Organization of the Tectonic Plates in the past 200 Myrs. American Geophysical Union Fall Meeting, San Francisco, December 2013.
- Applications of the Multipole Boundary Element Method in Geodynamics, Mathematical Methods in Geosciences, Padua, June 2013.

Andi Petculescu

- “Assessing the detectability of thunder from potential cloud-to-ground lightning on Titan: a model based on Cassini-Huygens measurements,” 3rd Workshop on Titan’s Past, Present and Future. Johns Hopkins University Applied Physics Laboratory, Laurel, MD, 8-10 April 2014.
- Molecular acoustics: Theory and applications, Universite de Montreal, Canada, June 2013.
- Molecular acoustics: Modeling sound propagation in polyatomic gases, University of New Orleans, February 2012.

Natalia Sidorovskaia

- “Assessing the detectability of thunder from potential cloud-to-ground lightning on Titan: a model based on Cassini-Huygens measurements,” 3rd Workshop on Titan’s Past, Present and Future. Johns Hopkins University Applied Physics Laboratory, Laurel, MD, 8-10 April 2014.
- Molecular acoustics: Theory and applications, Universite de Montreal, Canada, June 2013.
- Molecular acoustics: Modeling sound propagation in polyatomic gases, University of New Orleans, February 2012.

Colloquia and Seminar Talks

James B. Dent

- J.B. Dent, Seminar at the University of New Orleans, April 2016
- J.B. Dent, Science Interdisciplinary Monthly Meeting, UL-Lafayette, April 2016
- Seminar speaker at the University of Louisiana at Lafayette, November 2015
- Invited seminar speaker at LSU in April 2015
- Invited seminar speaker for the Fermilab VHEPP meeting, October 2015 (talk done by phone)
- Invited Seminar on Inflation given at the University of New Orleans, April 2014
- Invited Seminar, Arizona State University, November 2013
- Public Lecture, SMART Festival, Lafayette, LA, October 2013
- Invited Talk, LSU-S, October 2013
- Invited Seminar, Vanderbilt University, April 2013
- Invited Colloquium, University of Louisiana-Lafayette, Feb 2012
- Invited Seminar, University of New Mexico, March 2011
- Invited Seminar, University of Melbourne, March 2011

William A. Hollerman

- *Rockets and Starships: An Overview of Space Travel for the 21st Century*, Louisiana Engineering Society, Lafayette, LA, October 19, 2016.
- Triboluminescent Materials: Uses in Smart Sensors and Technology, Department of Physics, Auburn University, Auburn, AL, November 20, 2015.
- A Research Review of Highly Triboluminescent Europium Tetrakis Dibenzoylmethide Triethylammonium Phosphors, 61st International Instrumentation Symposium, Huntsville, AL, May 13, 2015.
- Potential of Using Triboluminescence to Detect Damage or Impacts in Spacecraft, 61st International Instrumentation Symposium, Huntsville, AL, May 13, 2015.
- Using Luminescent Materials to Detect Space Radiation, UL Lafayette Physics Seminar, Lafayette, LA September 10, 2014.
- Capabilities of the Louisiana Accelerator Center, Engineering Directorate, NASA Marshall Space Flight Center (MSFC), Huntsville, Alabama, April 3, 2013.
- Effects of Ionizing Radiation on Materials, Lecture to students in a 600 Level Course in Materials Science/Applied Physics, Department of Physics, Alabama A&M University, February 12, 2013.
- Beyond Glow Ammo: Behind the Scenes at a Student-Inspired Research and Development Program:
 - Department of Chemistry and Physics, Southeastern Louisiana University, Hammond, LA, March 23, 2012.
 - Department of Physics, University of New Orleans, New Orleans, LA, February 22, 2012.
 - Department of Physics, University of Louisiana at Lafayette, Lafayette LA, February 11, 2011.

Gabriele Morra

- Hierarchical Plate Tectonics and Plate Reorganizations, 2016, Invited Department Seminar at the LMU Munich, Germany
- Invited department seminar at the University of Minnesota in Minneapolis, 2015
Gabriele Morra, David A Yuen, Sang Mook Lee, Computational Methods for Volcanology: application to Central Asian Volcanism, 20-minute seminar at the School of Geosciences, University of Wuhan, Hubei, China, June 10, 2015
- Fractal Plate Tectonics and Global Plate Reorganizations" - University of Texas at Dallas - Geosciences Dep - Department Seminar, 2014
- "Subduction, megathrusts and underwater landslides: What the 2011 Japanese tsunami has taught us about tsunami hazards" - University of Texas at Dallas - Geosciences Dep - Lunch Seminar, 2014
- "Plate tectonics, megaquakes and underwater landslides: What the 2011 Japanese earthquake taught us about tsunami hazard" - University of New Orleans - Physics Dep. - Department Seminar, 2014
- Seminar talk at the Department of Physics, UL Lafayette, September 11, 2013

Andi Petculescu

- Molecular acoustics: Theory and applications. Universite de Montreal, Canada, June 2013 (invited).
- Molecular acoustics: Modeling sound propagation in polyatomic gases. University of New Orleans, February 2012 (invited).

Gabriela Petculescu

- Seminar: "Acoustics: a powerful tool for materials exploration," LA-Tech University Physics Seminar, Oct. 2016
- Presentation: "Ultrasonic probe for sensitization," to ONR and NSWC-CD NDE branch, Carderock, MD, July 16th, 2015.
- Seminar: "Sensitization of Aluminum Alloys - Ultrasound as a Possible Characterization Tool," ONR Summer Faculty Program – Seminar Series, NSWC - CD, MD and sister NSWC centers (by broadcast), Carderock, MD, July 15th, 2015.
- "Elastic Interactions in Ferromagnetic Fe-based Alloys," ONR Summer Faculty Program – Seminar Series, NSWC at Carderock, MD and also broadcasted, July 8th, 2014.
- "Elastic Interactions in Ferromagnetic Fe-based Alloys," University of New Orleans, Physics Department Seminar, Feb 2012.

Natalia Sidorovskaia

- Seminar, Institute of Applied Physics (Russia), November 2012.
- Seminar, Nizhny Novgorod State University (Russia), November 2012.
- Seminar, Physics Department, UL Lafayette November 2011.
- "Littoral Acoustic Demonstration Center – LADC: Assessing the long-term impact and recovery of marine mammal populations after the oil spill in the Gulf of Mexico," Marine Mammal Commission, May 11, 2011 New Orleans.

- “Modeling Short Term Dynamics of Marine Mammal Populations near the BP Oil Spill Site (Gulf of Mexico),” Poster, LSU, April 2011.

Rui Zhang

- Sinopec Houston LLC, 2016
- The University of Texas at Austin, 2015

Contributed Talks

William A. Hollerman

- Europium Tetrakis Dibenzoylmethide Triethylammonium: A Bright Functional, 8th Energy, Materials, and Nanotechnology (EMN) Meeting, Orlando, FL, November 24, 2014.

John J. Matese

- “Searching the WISE Preliminary Catalog for Massive Planets in the Oort Cloud.” Joint Session of the European Planetary Science Congress / Division of Planetary Science – American Astronomical Society; 02-07 October (2011); Nantes, France.

Gabriele Morra

- “Deep Earthquakes Spatial Distribution from of Numerical Modeling the Stress within a Subducting Lithosphere”, 2016, P. M. Gunawardana, G. Morra
- “On Modelling Bubbles in a Magmatic Conduit”, 2016, B Fischer, G Morra, A Petculescu, Geological Society of America - Baton Rouge
- “Numerical Modeling of fluid flow and heat transfer in fault systems”, Conlin, Daniel, Gottardi, Raphaël, Morra, Gabriele and Spezia, Kyle, South-Central Section - 50th Annual Meeting - 2016
- “Trench Advance By the Subduction of Buoyant Features-Application to the Izu-Bonin-Marianas Arc”, 2014, SDB Goes, L Fourel, G Morra, AGU Fall Meeting Abstracts 1, 4629
- Contribution of Elasticity in Slab Bending, 2014, L Fourel, SDB Goes, G Morra, AGU Fall Meeting Abstracts 1, 4628
- The seismic cycle on subduction thrusts: a laboratory validation and implications from large-scale geodynamic simulations, 2013, Y van Dinther, T Gerya, L Dalguer, M Mai, F Corbi, F Funiciello, G Morra, EGU General Assembly Conference Abstracts 15, 6875

Andi Petculescu

- Absorption and Dispersion in Venus' Lower and Middle Atmospheres, ASA Pittsburgh, June 2015.
- A physical model for predicting the sound speed and attenuation coefficient in Titan’s atmosphere based on Cassini-Huygens data, ICA-ASA 2013, Montreal, Canada, June 2013. Modeling thunder propagation and detectability on Titan. 161st Meeting of the Acoustical Society of America, 31 Oct–4 Nov 2011 (Seattle, WA).

- Gasdynamic modeling of strong shock wave generation from lightning in Titans troposphere. 161st Meeting of the Acoustical Society of America, 31 Oct–4 Nov 2011 (Seattle, WA).

Gabriela Petculescu

- “Response of ultrasound to aluminum alloys sensitization.” IEEE International Ultrasonics Symposium, Chicago, IL Sept. 4th, 2014.
- 2 contributed talks given by collaborators on common projects at 59th MMM conference, Honolulu, HI, Nov. 2014.
- “A search for new iron-based magnetostrictive materials.” International Workshop on Acoustic Transduction Materials and Devices, State College PA, May 2013.
- “Tetragonal Magnetostriction and Magnetoelastic Coupling in Fe-Al, Fe-Ga, and Fe-Ga-Al Alloys.” International Workshop on Acoustic Transduction Materials and Devices, State College PA, May 2012.
- “Temperature dependence of magnetoelastic properties of Fe_{100-x}Si_x (5<x<20).” 56th MMM Conference, Scottsdale AZ, October 2011.

Natalia Sidorovskaia

- **Sidorovskaia, N.**, Li, K., Tiemann, C., Ackleh, A., Tang, T., Risbourg, J. (2016). “Gulf of Mexico soundscapes as indicators of ecological stressors,” AGU Fall Meeting, San Francisco, Dec 12-16, 2016
- **Sidorovskaia, N.A.** and Li, K. (2016). “Development of unsupervised classifier for beaked whale clicks,” J. Acoust. Soc. Am. (5th Joint meeting of the Acoustical Society of America and the Acoustical Society of Japan in Honolulu, Hawaii, November 28, 2016, in session 1aSP, General Topics in Signal Processing I)
- **Sidorovskaia, N.A.**, Li, K., Tiemann, C., Ackleh, A., Tang, T. (2016). “Long-term spatially distributed observations of deep diving marine mammals in the Northern Gulf of Mexico using passive acoustic monitoring,” J. Acoust. Soc. Am. (the 5th Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan in Honolulu, Hawaii, November 29, 2016, in session 2pABb, Anthropogenic Transient Noise Sound Field and Its Effects on Animal Communication II).
- **Sidorovskaia, N.**, Li, K., Tiemann, C. O., Ackleh, A., Tang, T., Ioup, G.E., Ioup, J.W. (2016). PO14H-2902: Long-term Assessment of the 2010 Deepwater Horizon Oil Spill Impact on Deep Diving Marine Mammals. 2016. Ocean Sciences meeting, February 21-26, New Orleans, LA, USA
- Ackleh, A.S., Chiquet, R. A., Ma, B., Tang, T., Caswell, H., and **Sidorovskaia, N.** (2016). Accessing the Impact of Environmental Disasters on Population Dynamics Using Stochastic Matrix Models LA/MS MAA Conference, February 25-27, Shreveport, LA
- Ackleh, A.S., **Sidorovskaia, N.**, Tang, T., Chiquet, R., Ma, B., Tiemann, C., Ioup, W. J., Ioup, E. G. (2016). Assessment of the 2010 oil spill impact on deep diving marine mammals: beaked whales, 2016 Gulf of Mexico oil spill & ecosystem science conference, February 1-4, 2016, Tampa, FL
- Ackleh, A.S., Chiquet, R. A., Ma, B., Tang, T., Caswell, H., **Sidorovskaia, N** (2016). Accessing the Impact of Environmental Disasters on Population Dynamics Using Stochastic Matrix Models, 2016 Gulf of Mexico oil spill & ecosystem science conference, February 1-4, 2016, Tampa, FL

- **Sidorovskaia, N.**; Li, K., Tiemann, C.O., Ackleh, A., Tang, T., Ioup, G.E., Ioup, J.W. (2016). Automated Detection and Classification Algorithm for Beaked Whales in the Northern Gulf of Mexico 2016 Gulf of Mexico oil spill & ecosystem science conference, February 1-4, 2016, Tampa, FL.
- **Sidorovskaia, N.** (2016). “Decadal Evolution of the Northern Gulf of Mexico Soundscapes,” Fourth International Conference on the Effects of Noise on Aquatic Life, Dublin, Ireland, July 2016.
- **Sidorovskaia, N.A.**; Li, K.; Tiemann, C.O.; Ackleh, A.; Tang, T.; Ioup, G.E.; Ioup, J.W. OS13A-2024: Targeted Acoustic Data Processing for Ocean Ecological Studies, AGU Fall Meeting, San Francisco, Dec 14-18, 2015.
- **Sidorovskaia, N.A.**; Li, K.; Ackleh, A.; Tang, T.; Tiemann, C.O.; Ioup, J.W.; Ioup, G.E. Classification of beaked whale and dolphin clicks measured by environmental acoustic recording system buoys in the northern Gulf of Mexico Meeting of the Acoustical Society of America, Jacksonville, FL, Nov. 02-06, 2015.
- **Sidorovskaia, N.A.** Littoral Acoustic Demonstration Center - Gulf Ecological Monitoring and Modeling (LADC-GEMM): Consortium Introduction 2015 Oil Spill Science Conference, Houston, TX, Feb. 16-19, 2015.
- **N.A. Sidorovskaia**, Baoling Ma, Azmy S. Ackleh, Christopher O. Tiemann, Juliette W. Ioup and George E. Ioup (2014). “Acoustic Studies of the Effects of Environmental Stresses on Marine Mammals in Large Ocean Basins,” presented as a poster (OS21C-1155) at the AGU meeting, 15-19 December 2014, San Francisco, CA.
- Carl Richter, Lindsey Horton, Gary Acton, **N.A. Sidorovskaia**, Francisco Sierra, Chuang Xuan, Kenneth Verosub (2014). “Relative Geomagnetic Paleointensity, Environmental Magnetism, and Cyclicity of Contourites from the West Iberian Margin (IODP Site U1389),” presented as a poster (GP23B-3686) at the AGU meeting, 15-19 December 2014, San Francisco, CA.
- **N.A. Sidorovskaia**, A.S. Ackleh, Baoling Ma, Christopher Tiemann, Juliette W Ioup, and George E Ioup, “Using an autonomous passive acoustic observational system to monitor the environmental impact of the Gulf of Mexico oil spill on deep-diving marine mammals,” AGU Fall meeting, December 3-7 2012.
- **N.A. Sidorovskaia**, A.S. Ackleh, Christopher Tiemann, Juliette Ioup, and George Ioup. “Comparison of the first-year response of beaked and sperm whale populations to the Northern Gulf oil spill based on passive acoustic monitoring,” *J. Acoust. Soc. Am.* 132, 2009 (2012).
- Arslan M. Tashmukhambetov, George E. Ioup, Juliette W. Ioup, **N.A. Sidorovskaia**, Joal J. Newcomb, James M. Stephens, Grayson H. Rayborn, and Phil Summerfield. “The measured 3-D primary acoustic field of a seismic airgun array,” *J. Acoust. Soc. Am.* 132, 2056 (2012).
- Arslan M. Tashmukhambetov, George E. Ioup, Juliette W. Ioup, **N.A. Sidorovskaia**, Joal J. Newcomb, James M. Stephens, Grayson H. Rayborn, and Phil Summerfield. “Experimental determination of the three- dimensional primary field of a seismic airgun array,” *J. Acoust. Soc. Am.* 129 (4), pp. 2602 (2011). Program abstracts of the 161st meeting of the Acoustical Society of America.
- George E. Ioup, Juliette W. Ioup, Christopher O. Tiemann, and **N.A. Sidorovskaia**. “Complementary techniques for robust acoustic identification of individual sperm and

beaked whales,” J. Acoust. Soc. Am. 129 (4), pp. 2602-2602 (2011). Program abstracts of the 161st meeting of the Acoustical Society of America.

- **N.A. Sidorovskaia**, A.S. Ackleh, N. Pal, Juliette W. Ioup, George E. Ioup, and Christopher O. Tiemann. “Using acoustic cue statistics in matrix population models to study short- term and long- term marine mammal population dynamics in the northern Gulf of Mexico,” J. Acoust. Soc. Am. 129 (4), pp. 2372-2372 (2011). Program abstracts of the 161st meeting of the Acoustical Society of America.
- **Sidorovskaia, N.A.**; Ackleh, A.S.; Ma, Baoling; Tiemann, Christopher; Ioup, George E.; Ioup, Juliette W. “Long-term acoustic monitoring of marine mammal response to the 2010 oil spill in the Northern Gulf of Mexico.” The Journal of the Acoustical Society of America, 130(4), p. 2537 (2011). Program abstracts of the 162nd meeting of the Acoustical Society of America.

Journal Referees

James B. Dent

- Monthly Notices of the Royal Society (2013)
- Astroparticle Physics (2013)

William A. Hollerman

- Journal of Luminescence (2009-Present)
- IEEE Sensors Journal (2012-Present)
- Journal of Physics D: Applied Physics (2012-Present)
- IEEE Transactions on Nuclear Science (1998-Present)

Gabriele Morra

- Geophysical Journal International
- Editor-in-Chief, AGU Book, “Subduction Dynamics: From Mantle Flow to Mega Disasters”
- Journal of Geodynamics
- Journal of Geophysical Research
- Physics of the Earth and Planetary Interiors
- Earth and Planetary Science Letters
- Acta Geotechnica
- Geoscience Frontiers
- Tectonophysics
- Annuals of Geophysics
- Science

Andi Petculescu

- Journal of the Acoustical Society of America
- Icarus
- Planetary and Space Sciences
- IEEE Sensors

Gabriela Petculescu

- AIP Advances
- Elsevier, Physica B
- IEEE Transactions on Magnetics
- Journal of Applied Physics
- Journal of Alloys and Compounds
- Journal of the Acoustical Society of America
- Wave Motion
- Europhysics Letters
- Journal of Materials Science
- Nature
- National Science Foundation

Natalia Sidorovskaia

- Journal of Acoustical Society of America
- Canadian Acoustics Journal
- Physics Essays
- AIP
- PLOS One
- Annals of Marine Biology and Research
- McGraw-Hill, Addison Wesley

Rui Zhang

- Deputy Associate editor, Interpretation
- Geophysics
- Petroleum Geosciences
- Journal of Applied geophysics
- International Journal of Greenhouse Gas control
- Journal of Earth Science
- Journal of Natural Gas Science and Technologies
- Journal of Petroleum Science and Engineering

Other

Organized Special Sessions and Conferences

James B. Dent

- Organizing Committee for the SMART Festival, Lafayette, October 2013
- Organizing Committee for the Primordial Magnetism Workshop held at ASU, April 2011
- Organizing Committee for the New Directions in Cosmology Workshop held at ASU, January 2012.

William A. Hollerman

- Meeting Organizer and Host, NASA Academy of Aerospace Quality (AAQ) Expert User Group, October 20, 2014.
- Developing Impact Marking Projectiles Using Triboluminescent Materials, 17th International Conference of the American Physical Society Topical Group on Shock Compression of Condensed Matter, Chicago, IL, July 1, 2011.

Gabriele Morra

- Organized a session at the GSA 2016, Denver: "T220. Physical and Numerical Modeling of Geologic Processes".
- The geodynamics of plate tectonics. Session at the American Geophysical Union Fall Meeting, December 2012.
- First international conference on geodynamics. Title of the conference "Slab Dynamics". Jeju Island, South Korea. August 2011. Main organizer and Chief Editor of the following AGU Book.

Natalia Sidorovskaia

- "Fusion of Bio-physical Data and Predictive Modeling to Understand Gulf of Mexico Marine Species Resilience to Environmental Stresses and Disasters," 2016 Oil Spill Science conference, February 2016, Tampa, Florida
- "Modeling and Observing the Physical-Biological Interactions that Organize the Spatiotemporal Distribution of Biomass in Marine Ecosystems," 2016 Ocean Sciences meeting, New Orleans, Louisiana, February, 2016

Graduate Student Production

Graduate Students

James B. Dent

Chair of the Committee, Master of Science in Physics, UL Lafayette
Alex Sylvester, December 2015
Chase Gaudet, December 2013

Gary A. Glass

Chair of the Committee, Master of Science in Physics, UL Lafayette
Jack Manuel, Fall 2011
Dustin Phillips, Fall 2011
Henry Luyombya, Summer 2011
Boyko Perfanov, Fall 2011

William A. Hollerman

Chair of the Committee, Master of Science in Physics, UL Lafayette
Stephen Williams, Summer 2016
Lika Kobakhidze, Fall 2012
Mark Roberts, Spring 2011

Member of the Ph.D. Committee

Ross S. Fontenot, May 2013, Alabama A&M University
Noah Bergeron, February 2014, Louisiana Tech University

Member of the Committee, Master of Science in Physics, UL Lafayette
Boyko Perfanov, Fall 2012.
Dustin Z. Phillips, Fall 2011.
Henry Luyombya, Fall 2011.

Andi Petculescu

Chair of the Committee, Master of Science in Physics, UL Lafayette
Kevin Pitre, Spring 2016
Mathbar Raut, Spring 2015
Caleb O'Connor, Summer 2014
Akinjide Akintunde, Spring 2014
Joshua Riner, Spring 2011

Gabriela Petculescu

Chair of the Committee, Master of Science in Physics, UL Lafayette
C. U. Chukwunonye, May 2014
Kobe Ledet, Fall 2012

Natalia Sidorovskaia

Chair of the Committee, Master of Science in Physics, UL Lafayette
Fatemeh Karbalaei Saleh, Spring 2014

Member of the Committee, Master of Science in Physics, UL Lafayette
Prasanna Gunawardana, Spring 2016
Stephen Williams, Spring 2016
Mathbar Raut, Spring 2016
Jacque Meche, Fall 2016
Boyko Perfanov, Fall 2012
Lika Kobakhidze, Fall 2012

Joshua Riner, Spring 2011
Mark Roberts, Spring 2011
Jack Manuel, Summer 2011

Funding

External Funding

James B. Dent

- Co-PI with Dr. Hollerman on a \$6000 LYRA award for undergraduate student John Miller, 2015.
- PFUND Grant, \$8050, 2013.

Gary Glass

- ARRA: MRI-R2: Development of Electrostatic High Energy Focused Ion Beam (HEFIB) Nanoprobe System, National Science Foundation, 2010-2013, \$610,879.
- Installation of Magnetic Quadruple Focusing System at The University of Massachusetts – Lowell, 2011 \$114,000.
- Installation of Magnetic Quadrupole Doublet Focusing System at Amethyst Research Coporation, Office of Naval Research, 2010-2011, \$206,000.

William A. Hollerman

- Low Energy Nuclear Astrophysics Research for Student John Miller Using the 5SDH-2 Pelletron at the Louisiana Accelerator Center, Louisiana Space Grant (LSPACE) Undergraduate Research Assistantship (LURA), \$6,000, 2015-2016, Principal Investigator.
- Feasibility of EuD₄TEA-Based Sensors to Detect Space Radiation, Louisiana Space Grant (LaSPACE) Consortium, Additional Funds of \$6,500 for Total of \$35,200, 2014-2015, Principal Investigator.
- Feasibility of EuD₄TEA-Based Sensors to Detect Space Radiation, Louisiana Space Grant (LaSPACE) Consortium, \$28,700, 2014-2015, Principal Investigator, Submitted, April 2014, Awarded August 2014.
- Procurement of a First Generation EMCO LabKit Apparatus for, Louisiana Board of Regents Pilot Funding for New Research (PFUND), \$10,000, 2014-2015, Principal Investigator, Submitted April 2014, Awarded August 2014.
- Special Travel for Aerospace Researchers and Students (STARS), Louisiana NASA Experimental Program to Stimulate Competitive Research (EPSCOR), Principal Investigator.
- Building a Robust Geiger Counter to Fly on the HASP Balloon, Louisiana Space Grant (LaSPACE) Consortium, \$52,150, 2009-2011, Principal Investigator.
- Developing Prototype Hybrid Luminescent Ammunition (HLA). U.S. Army Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, New Jersey, \$630,000, 2009-2011, Principal Investigator.
- Collecting High-Speed Camera Data from Microwave Induced Visible Electroluminescence, Links with Industry. Research Centers, and National Labs (LINK), Louisiana Board of Regents, \$4,000, Principal Investigator.

John Meriwether

- Forest Hydrology and accretion modeling to evaluate the impacts of Hurricane Sandy. US Geological Survey, Co-PI, \$315,000, 2013-2016.

Gabriele Morra

- A Fast Multipole Approach to Modeling Tsunami Waves. Board of Regents - pFund. \$10,000 (PI), 2014-....
- Computational Development of the Fast Multipole. Boundary Element Method for Modeling Three Dimensional Geodynamic Problems, Board of Regents - RCS. \$119,000 (PI), 2014-....
- Planet-scale reorganizations of the plate–mantle system. Australian Research Council Discovery Grant, AUD 300,000 (\$262,747 USD), 2009-2012

Andi Petculescu

- Infrasound Sensing on Mars Based on Deployable Dome Structures: A Feasibility Study. (Louisiana Space Consortium GSRA Award #101623), \$7,775, 2015.
- Pilot Study for a Distributed Acoustic Interface for Manned Space Habitats Louisiana Space Consortium GSRA Award #101623, \$33,700, awarded in 2015.
- Interstitial Gas Effects on Granular Dynamics. The “Pure Granular” State (BoR: LEQSF (2007-10)-RD-A-37), \$131,638, 2007-2011.
- Computational Fluid Dynamics Simulation of Thunder on Titan (Louisiana Space Consortium LURA Award #51968), \$6,000, 2011-2012.
- Pilot Study: Modeling Thunder on Titan, as a Tool to Corroborate Titanian Lightning (Louisiana Space Consortium LURA Award #44305), \$6,000, 2011-2012.
- Understanding Infrasound Absorption in the Lower Thermosphere as a Step Toward Quantitative Infrasonic Aeronomy (BoR/NSF–EPSCOR: LEQSF (2013)-PFUND-339), \$10,000, 2013.
- Understanding Infrasound Absorption in the Lower Thermosphere as a Step Toward Quantitative Infrasonic Aeronomy (\$10,000, NSF–EPSCOR: LEQSF (2013)-PFUND-339): Jan 2014-Dec 2014.

Gabriela Petculescu

- “Failure prevention for sensitized structural alloys used in costal transportation” TIRE-DoT, 30K, 07/2016-06/2017.
- STEP grant for revitalization of Physics Lab. Computers: \$7,760, funded Dec. 2015.
- Contract: SFRF–ONR, includes \$22,000, laboratory, and summer student, May-July 2015.
- “Elastic interactions in solids: A tool for new materials development and improved structural safety.” NSF (2015)-LINK-99 \$6,000, funded April 2015.
- SFRF – ONR, including \$20,000, laboratory space with instrumentation not available at ULL, samples, and physics student for 10 weeks, May-July 2014.
- “Enhanced-Magnetostriction Materials and Iron Stability.” NSF (2013)-LINK-81, \$6,000, completed Sept. 2014.

- ONR Summer Fellowship, total amount \$102,000, (2008-2013).
- NSF-LINK award NSF (2013)-LINK-81, amount \$6,000, 2013
- RCS grant, LA Board of Regents Support Fund, amount: \$121,000, 2007-2011.
- NASA–LaSPACE award # NNX10AI40H, amount: \$20,000, 2010-2011.

Natalia Sidorovskaia

- Littoral Acoustic Demonstration Center (LADC)”, \$5,238,174; BP/GOMRI, RFP IV (awarded for 2015-2017, Lead PI).
- “Development of the Ocean Acoustic Propagation Model for the Louisiana Immersive Technologies Enterprise (LITE) environment.” Information Technology Initiative (ITI), UL Lafayette, \$49,164.
- “Modeling of Short-Term and Long-Term Marine Mammal Population Trends in the Vicinity of the Deepwater Horizon Oil Spill Using Passive Acoustic Monitoring Cues.” NSF RAPID, \$192,197, August 2010-December 2011 (granted to UL: Mathematics and Physics departments).
- Source Characterization Study 2007 (Data Analysis/Modeling Component) Amnd. 2; OGP; \$34,016 to UL, August 2010-June, 2011.
- Travel grant from the Russian ministry of education, \$10,000 (2012-2013).
- Travel Grant from the organizing committee of the International Conference on “The Effects of Noise on Aquatic Life.” Budapest, August 11-16, 2013, \$3,000 (2013).
- Travel Grant from the American Petroleum Institution \$3,000 (2013).

Rui Zhang

- Sinopec Houston LLC, Research for New Real Time Seismic Processing Technique, 2016-2017, \$16,000
- Department of Energy, Energy Efficiency & Renewable Energy, Integrated Enhanced Geothermal Systems (EGS) Research and Development: Push-pull well testing using CO₂ with active source geophysical monitoring. Control Number: 0842-1554. 2014, total funding \$750,000 ULL subcontract \$54,000.

Awards / Honors

James B. Dent

- Outstanding Advisor Award from the University of Louisiana at Lafayette, 2015.
- KITP Scholar (Kavli Institute of Theoretical Physics at the University of California at Santa Barbara), 2015.
- The Dr. and Mrs. Sammie W. Cospers Endowed Professorship, 2014-2017.
- Blavatnik Award Nominee for UL-Lafayette, 2014.
- Rising Star Award for the College of Sciences, 2014.
- Blavatnik Nominee for UL-Lafayette, 2013.

Gary A. Glass

- Dr. and Mrs. Sammie W. Cospers/BORSF Endowed Professor of Physics, 2008-2011.

William A. Hollerman

- Innovator Award, UL Lafayette Research Office. Completed research as part of the non-burning tracer patent, May 2013.

Gabriele Morra

- Hensarling/Chapman Endowed Professorship in Geology from the School of Geosciences at UL Lafayette, 2016-2018.

Gabriela Petculescu

- National award: Office of Naval Research (ONR) Summer Fellowship (SFFP), May-July 2015.
- Innovator award – UL Lafayette for academic year 2013-2014.
- Office of Naval Research Summer Faculty Research Fellow, at Naval Surface Warfare Center, West Bethesda MD: 2011, 2012, 2013.

Natalia Sidorovskaia

- Coca-Cola/BORSF Endowed Professorship, 2014-2017.
- 2013 – Fellow of the Acoustical Society of America December 2013.

Other Professional Activities

James B. Dent

- TedX speaker at TedX Vermilionville, September 2015 in Lafayette, LA
Youtube link: <https://www.youtube.com/watch?v=pFAFepieIA>.
- Member, American Physical Society.
- Member, American Association of Physics Teachers.

William A. Hollerman

Patents

- **W.A. Hollerman**, N.P. Bergeron, and B.M. Broussard. Hybrid-Luminescent Munition Projectiles. U.S. Patent and Trademark Office (USPTO) Patent Number 8,402,896, March 26, 2013.

Memberships

- American Institute of Aeronautics and Astronautics
- IEEE Nuclear and Plasma Society
- International Society for Optical Engineering (SPIE)
- Sigma Pi Sigma, Physics Honor Society

Gabriele Morra

Memberships

- American Association of Physics Teachers
- American Geophysical Union
- European Geosciences Union

- Summer school in Nancy, Ecole National Superior, July 2013, (<http://www.gocad.org/w4/index.php/newsmenu/sumer-course>)

Andi Petculescu

Memberships

- Acoustical Society of America
- American Physical Society
- Audio Engineering Society
- Associate Editor for the Journal of the Acoustical Society of America
- Co-Editor for JASA's first Special Issue "Acoustic and Related Waves in Extraterrestrial Environments"
- Reviewer for the *Journal of the Acoustical Society of America*, IEEE Sensors, Sensors and Actuators--Chemical, Measurement Science and Technology, Planetary and Space Sciences
- Guest Editor for the Special Issue "Acoustic and Related Waves in Extraterrestrial Environments." *Journal of the Acoustical Society of America* (2015-present, invited).

Gabriela Petculescu

Memberships

- Acoustical Society of America
- American Physical Society
- Sigma Xi, The Scientific Research Society
- Patent: System and Methods for Determining the Degree of Sensitization Using an Ultrasonic Sensor, filed Sept 2nd, 2014.
- Research program evaluation for promotion for an outside institution, 2015.
- National Science Foundation Graduate Research Fellowship Program, Jan. 2015, National Panel Review for proposal review and selection.
- Part of approved proposal to Oak Ridge National Lab CNMS, ID: CNMS2014-256. Project Title: "Investigation into the BCC Structure of Iron and its anomalies above 400 K." This grant provides access to the User Nanoscience Research Program at the Center for Nanophase Materials Sciences (CNMS) for one week for our group.

Natalia Sidorovskaia

Memberships

- Acoustical Society of America
- American Geophysical Union
- Sigma Pi Sigma National Physics Honor Society
- Active in the Technical Committees on Underwater Acoustics and Signal Processing
- Participated in organizing the 75th Anniversary meeting of Acoustical Society of America; - Chairing the session at the 75th Anniversary meeting of Acoustical Society of America.
- Participated in four Technical Program Organizing Meetings for Signal Processing, Underwater acoustics, and Animal Bioacoustics Technical Committees.

Rui Zhang

Membership

- Society of Exploration Geophysics
- American Geophysical Union
- European Association of Geoscientists & Engineers

Outreach

James B. Dent

- Head of and Speaker for the Physics portion of Science Day
- Member of the College of Sciences Recruitment team
- Organizer of a teaching workshop for area high school teachers, Summer 2016
- Talk at Comeaux High School, Spring 2016
- Talk at Fontainebleau High School, Spring 2016

William A. Hollerman

Louisiana Board of Regents Speaking of Science (SoS):

Rockets and Starships: Overview of Space Travel for the 21st Century:

- Anacoco Elementary School, Anacoco, LA, January 7, 2016.
- Runnels High School, Baton Rouge, LA, January 11, 2016.
- Lake Castle Private School, Madisonville, LA, October 26, 2016.

Understanding Wintergreen Candy:

- Lake Castle Private School, Madisonville, LA, January 12, 2016.
- Judice Middle School, Duson, LA, February 22, 2016.
- Holy Family Catholic School, Lafayette, LA, March 15, 2016.

- A Trip Through Our Universe, Anacoco Elementary School, Anacoco, LA January 7, 2016.
- The Physics of Barbecue, Kenilworth Science and Technology School, Baton Rouge, November 12, 2016.

Louisiana Board of Regents Speaking of Science (SoS):

- Rockets and Starships. Loranger Elementary School, Loranger, LA April 17, 2015.
- Rockets and Starships: Overview of Space Travel for the 21st Century, LSTA/LATM
- Joint Math and Science Conference, November 11, 2015.
- Rockets and Starships: Overview of Space Travel for the 21st Century, LSTA/LATM Joint Math and Science Conference, November 11, 2015.

Gabriela Petculescu

- Observe the Moon Night (InOMN) at the Lafayette Science Museum - Optics Demonstrations, Oct 8th, 2016.
- ULL Chem-E Car (held by AIChE) - counsel for kinematic motion with variable acceleration, numerical solutions, 2016.
- National History Day: Marie Curie project - interviewed by student from the Academy of Sacred Heart (won regional and state competition), April 2016.

Natalia Sidorovskaia

“Whale's Stories from the Gulf,” November 10, 2015 presentation at Lake Castle Madisonville Private School.