

CURRICULUM VITAE

Natalia A. Sidorovskaia

Professor and Chairperson
Department of Physics
University of Louisiana at Lafayette
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<https://physics.louisiana.edu/node/94>

EDUCATION

University of New Orleans, USA, 1994-1997

Ph.D. in Engineering and Applied Science (Physics track), 1997

M.S. in Applied Physics, 1996

Gorky State University, Nizhny Novgorod, Russia, 1985-1990

M.S. in Radiophysics, 1990

EXPERIENCE

University of Louisiana at Lafayette

2012 – Present Professor and Chairperson, Department of Physics

2006 – 2012 Associate Professor and Chairperson (since August 2007), Department
of Physics

2000 – 2006 Assistant Professor, Department of Physics

Landmark Graphics Corporation (A Halliburton Company)

1998 – 2000 On-site Consultant

University of New Orleans

1997 – 1998 Professional Contractor, Department of Physics

1995 – 1996 Research Associate, Department of Physics

1994 Research Assistant, Department of Physics

University of Miami

1996 Visiting Research Associate, Division of Applied Marine Physics

Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia

1992 – 1994 Junior Researcher, Hydrophysics Division

1990 – 1992 Probationer-Researcher, Hydrophysics Division

PROFESSIONAL CERTIFICATIONS

2020 Certified Online Teacher

2000 Instructor Certification in DepthTeam Express (Landmark Graphics Corporation Depth Imaging Software)

1999 Customer Support Certification in DepthTeam Explorer (Landmark Graphics Corporation Depth Imaging Software)

1998 Customer Support Certification in DepthTeam Interpreter (Landmark Graphics Corporation Depth Imaging Software)

AWARDS

2020-2022 American Council on Education (ACE) Fellow

2019 Certificate of Achievement in Sponsored Research Award, University of Louisiana at Lafayette

2017 *Research Excellence Award*, University of Louisiana at Lafayette

2016 *Outstanding Achievement in Research and Sponsored Activities Award*, University of Louisiana at Lafayette

2014 – 2023 *Coca-Cola/Board of Regents Endowed Professorship in Physics*, University of Louisiana at Lafayette

2013 *Fellow*, Acoustical Society of America

1997 *Bill Good Award from Physics faculty*, in recognition of outstanding research in Physics, University of New Orleans

1996 *Bill Good Award from Physics faculty*, in recognition of outstanding research in Physics, University of New Orleans

- 1996 *Distinguished Graduate Research Award at the Doctoral Level*, University of New Orleans
- 1997 “Who’s Who in the World”, 14th Edition
- 1994 Grant of the International Soros Foundation
- 1985 – 1990 *State University Fellowship*
- 1985 *Gold Medal* on the graduation from high school (Valedictorian)

RESEARCH INTERESTS

Marine ecosystem studies using acoustic methods. Marine mammal acoustics. Ocean noise and climate change. Ocean natural resources mapping using acoustics. Machine Learning and Artificial Intelligence algorithms for acoustic data mining. Computational models for sound propagation in inhomogeneous waveguides (with emphasis on applications to ocean acoustics). Theoretical methods of scattering from objects in waveguides. Hydrophysical inverse problems (source imaging, ocean acoustic tomography). Big data intelligence. Medical Acoustics. Physics Education Research.

PROFESSIONAL MEMBERSHIPS

American Geophysical Union
 Acoustical Society of America
 Sigma Pi Sigma National Physics Honor Society
 Southwest Louisiana Geophysical Society

GRANTS (as a PI/Co-PI)

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|---------|--------------|--|
| 2021-24 | \$598,779 | (FY2020) Defense Established Program to Stimulate Competitive Research competition: <i>Glider’s Deepwater Hurricane Reconnaissance in the Gulf of Mexico</i> (PI) |
| 2021-24 | \$14,065,204 | Louisiana Department of Wildlife and Fisheries: <i>Leveraging Opportunities and Strategic Partnerships to Advance Tolerant Oysters for Restoration (LO-SPAT)</i> (Co-PI) |

2018-21	\$367,288	Bureau of Ocean Energy Management (through HDR): <i>Passive Acoustic Monitoring Program for the Northern Gulf of Mexico</i> (PI)
2018 – 21	\$456,593	National Science Foundation (MRI): <i>Acquisition of an integrated AUV system for observations of physical and biogeochemical interactions in the Northern Gulf of Mexico ecosystem across spatiotemporal scales</i> (PI)
2018 – 19	\$680,552	Gulf of Mexico Research Initiative: <i>Littoral Acoustic Demonstration Center – Gulf Ecological Modeling and Monitoring</i> (LADC-GEMM), www.ladcgemm.org (PI)
2017 – 21	\$278,415	International Association of Oil and Gas Producers, Sound and Marine Life Joint Industry Project: <i>3-D Source Characterisation Experiment - Data Analysis & Reporting</i> (PI)
2017 – 18	\$326,000	Bureau of Ocean Energy Management (through HDR): <i>Passive Acoustic Monitoring Program for the Northern Gulf of Mexico</i> (PI)
2015 – 17	\$5,238,174	Gulf of Mexico Research Initiative: <i>Littoral Acoustic Demonstration Center – Gulf Ecological Modeling and Monitoring</i> (LADC-GEMM), www.ladcgemm.org (PI)
2014	\$1,000	University of Louisiana at Lafayette: <i>Travel grant</i>
2014	\$500	American Physical Society: <i>Travel Grant for Women Speakers Program</i>
2013	\$3,000	American Petroleum Institute: <i>Travel Grant Travel Grant</i>
2013	\$3,000	3 rd International Conference on the Effects of Noise on Aquatic Life: <i>Travel Grant</i>
2012 – 13	\$10,000	Russian Academy of Sciences: <i>Travel Grant</i> (PI)
2010 – 11	\$34,000	International Association of Oil and Gas Producers, Sound and Marine Life Joint Industry Project: <i>Source Characterization Study 2007 (Data Analysis/Modeling Component)</i> , Amend. 2 (PI)
2010 – 2011	\$192,197	National Science Foundation, RAPID: <i>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</i> (Co-PI)
2008 – 10	\$49,164	Louisiana Governor's Information Technology Initiative: <i>Development of the Ocean Acoustic propagation Model for the Louisiana Immersive Technologies Enterprise (LITE) environment</i> (PI)
2007 – 08	\$57,662	International Association of Oil and Gas Producers, Sound and Marine Life Joint Industry Project: <i>Source Characterization Study 2007 (Data Analysis/Modeling Component)</i> (PI)

2007 – 08	\$65,500	SPAWAR (congressional appropriation): <i>Using passive acoustics to detect Beaked Whales</i> (PI)
2005 – 06	\$1,381	Office of Faculty Development and Academic Planning, UL Lafayette (Instructional Improvement Mini-Grants): <i>Implementation and Effectiveness assessment of Interactive Lecture Demonstrations in Introductory Physics Courses at UL Lafayette</i> (PI)
2005	\$1,000	National Science Foundation (EPSCoR): <i>Travel Grant for Emerging Faculty</i> (PI)
2005 – 2006	\$19,626	International Association of Geophysical Contractors (On Behalf of the Industry Research Funding Coalition): <i>Littoral Acoustic Demonstration Center - Seismic Airgun Characterization in the Gulf of Mexico</i> (PI)
2005 – 2006	\$7,800	National Science Foundation (EPSCoR, Pilot Funding for New Research): <i>Facilitation of biomedical acoustics research at the Physics Department of UL Lafayette</i> (PI)
2003	\$3,665	NASA-Stennis Space Center: <i>IAGC Airgun Calibration</i> (PI)
2001 – 2004	\$21,000	Office of Naval Research: <i>Littoral Acoustic Demonstration Center. Phase One: Contributions of Marine Mammals and Offshore Drilling to the Ambient Noise Baseline at the Shelf Edge and Acoustic/Oceanographic Equipment Construction</i> (Lead PI: George Ioup, UNO, ~\$2,000,000 in total) (UL PI)
2002 – 2003	\$360	Office of Faculty Development and Academic Planning, UL Lafayette: <i>Faculty Development Grant</i>
2001 – 2002	\$461	Office of Faculty Development and Academic Planning, UL Lafayette: <i>Faculty Development Grant for workshop on fire ants acoustic research,</i>
2001 – 2004	\$82,788	Research Competitiveness Subprogram, Board of Regents Support Fund: <i>Computational Development of the Unified Approach to the Problems of Signal Propagation and Scattering in Ocean Environments</i> (PI)
2001	\$3,500	University of Louisiana at Lafayette, Summer Research Award: <i>Simulation of Acoustic Signal Distortion in Shallow Water</i>

UNIVERSITY SERVICE

Chair, University Grievance Committee (2019-Present)

Chair, Department Head Council (2016 – 2018)

Chair, Committee on Academic Affairs and Standards (2017 – Present)

Chair, Graduate Curriculum Committee (2015 – 2017)
Chair, Inaugural Science Day Committee (2014)
Co-Chair, Dean of Sciences Search Committee (2013)
Co-Founder, SMART (Science Meets ART) Festival (2013 – 2014)
Grievance Committee (2016 – Present)
Graduate Curriculum Committee (2008 – 2015)
Graduate Council (2010-2012)
Undergraduate Program Coordinator, Department of Physics (2012 – 2015)
Graduate Program Coordinator, Department of Physics (2006 – 2007)
Faculty Senate (2008 – Present)
Graduate Appeal Committee (2001 – 2007)
Graduate Faculty Review Committee (2006 – 2007)
Mentor, Louisiana Alliance for Minority Participation scholars (2001 – 2007)
Concert Committee (2003 – 2012)
Judge for Literary Rallies and Scientific Fairs (2003 – 2012)

PROFESSIONAL SERVICE

Technical Program Chair, Acoustical Society of America (Fall meeting, 2017)
Technical Program Organizing Meetings, Acoustical Society of America (2004, 2007, 2010, 2011)
Reviewer (Nature/Scientific Reports, Journal of Acoustical Society of America, Canadian Acoustics Journal, Physics Essays, AIP, McGraw-Hill, Addison Wesley)

Special Sessions, Organizer and Chair

Marine Mammal Synthesis workshop, October 31-November 2, 2018, Washington, DC

"Understanding Population Status, Trends and Connectivity of Gulf of Mexico Large Marine Vertebrates as Sentinels for Ecosystem Health in the Context of Restoration", GOMOSES conference, February 2017, New Orleans, LA

"Gulf of Mexico Acoustic Research Grand Challenges and Convergence Research Approaches", IEEE-ICASSP 2017, March 2017, New Orleans, LA,
<http://www.ieee-icassp2017.org/acoustics-forum.html>

Special Sessions in memory of George Ioup “Acoustic research in the Northern Gulf of Mexico”, Acoustical Society of America, Fall meeting 2017, New Orleans, LA

“Modeling and Observing the Physical-Biological Interactions that Organize the Spatiotemporal Distribution of Biomass in Marine Ecosystems”, 2016 Ocean Sciences meeting, February 21-26, New Orleans, LA, USA

“Fusion of bio-physical data and predictive modeling to understand Gulf of Mexico marine species resilience to environmental stresses and disasters”, 2016 Oil spill and Ecosystem Science conference, February 1-4, 2016, Tampa FL

“Acoustics and the Deepwater Horizon Oil Spill I”, Acoustical Society of America meeting, November 2010, Cancun

COMMUNITY OUTREACH

Speaking of Science (Louisiana Board of Regents Program) Volunteer

“Dispatches from the Gulf”, Discussion Panelist, Shreveport Science Center, April 7, 2016

Congressional Visit on June 1, 2015, organized by the American Physical Society. Talked to staffers of Senators Bill Cassidy and David Vitter, Representatives Charles Boustany and Steve Scalise and to Mississippi Senator Thad Cochran about support for funding for basic research.

Science Meets Art (SMART) festival organizing committee (LITE Center, 10/25/2013)

Science Meets Art (SMART) festival organizing committee (LITE Center, 10/25/2014)

Recent news media coverage

<http://theadvocate.com/news/11778331-123/ul-lafayette-team-heads-back-to>

<http://gulfresearchinitiative.org/tracking-marine-mammal-recovery-deepwater-horizon-oil-spill/>

<http://www.katc.com/story/28094751/ul-leads-research-on-oil-spills-effect-on-whales?clienttype=generic&mobilecgbyypass>

<http://krvs.org/post/apres-midi-march-16-ul-lafayette-physics-math-52-million-research-grant-lynda-frese-residency>

<http://www.greenpeace.org/usa/en/news-and-blogs/campaign-blog/whale-ho/blog/26389>

<http://news.discovery.com/animals/sperm-whales-gulf-oil-spill.html>

<http://esciencenews.com/articles/2010/11/16/listening.ocean.spills.and.their.ecological.effects>

<http://www.youtube.com/watch?v=pb2uL-WyVaE>

PUBLICATIONS

BOOKS

1. Alexander I. Khil'ko, Jerald W. Caruthers, Natalia A. Sidorovskaia, "*Ocean Acoustic Tomography. A review with Emphasis on the Russian Approach,*" Russian Academy of Sciences, Institute of Applied Physics, Nizhny Novgorod, 1998

CHAPTERS IN BOOKS

1. Sidorovskaia, N.A., Ackleh, A.S., Ma, B., Tiemann, C.O., Ioup, J.W., and Ioup, G.E. (2016). "Passive acoustic monitoring of environmental impact of oil exploration in the Gulf of Mexico," in book: "*Effects of Noise on Aquatic Life II,*" Popper, Arthur, Hawkins, Anthony (Eds.), Vol. 875 of the series Advances in Experimental Medicine and Biology, 1007-1014.
2. Ioup, G.E., Ioup, J.W., Sidorovskaia, N.A., Tiemann, C.O., Kuczaj, S.A., Ackleh, A.S., Newcomb, J.J., Ma, B., Paulos, R., Ekimov, A., Rayborn, G.H., Stephens, J.M., Tashmukhambetov, A.M. (2016). "Environmental Acoustic Recording System (EARS) in the Gulf of Mexico," In book: "*Listening in the Ocean: new discoveries and insights on marine life from autonomous passive acoustic recorders,*" Au, Whitlow W.L., Lammers, Marc O. (Eds.), Springer-Verlag New York
3. Werby, M.F., and Sidorovskaia, N.A. (2001). "Modern developments in the theory and application of classical scattering," in book: "*ACOUSTIC INTERACTIONS WITH SUBMERGED ELASTIC STRUCTURES. Part III: Acoustic Propagation and Scattering, Wavelets and Time Frequency Analysis,*" edited by Ardéshir Guran, Adrianus De Hoop, Dieter Guicking, and Francesco Mainardi, World Scientific Publishing, New Jersey, August 2001, pp.256-358 (ISBN: 981-02-2950-X)
4. Postoenko, Ya.K., Sidorovskaya, N.A., *et al.*, (1993). "The reconstruction of structure of moving acoustical sources with complex spectrum," In book: "*Formation of acoustical waves in oceanic waveguides. Inhomogeneity reconstruction*", ed. Zverev V.A., Institute of Applied Physics of Russian Academy of Sciences, Nizhny Novgorod, 35 pp., 1993 (in Russian, translated in English).

PEER-REVIEWED PUBLICATIONS

1. Li, K., Sidorovskaia, N.A., Guilment, T., Tang, T., Tiemann, C.O. (2021). Decadal Assessment of Sperm Whale Site-Specific Abundance Trends in the Northern Gulf of Mexico Using Passive Acoustic Data, *J. Mar. Sci. Eng.* 2021, 9, 454, <https://doi.org/10.3390/jmse9050454>
2. Guilment, T., Sidorovskaia, N., and Li, K. (2020). Modelling the Acoustic Repertoire of Cuvier's Beaked Whale Clicks, *The Journal of the Acoustical Society of America* **147**, 3605-3612, <https://doi.org/10.1121/10.0001266>

3. Li, K., Sidorovskaia, N., and Tiemann, C. (2020). Model-based unsupervised clustering for distinguishing Cuvier's and Gervais' beaked whales in acoustic data. *Ecological Informatics*, vol. 58, 19p. (<https://doi.org/10.1016/j.ecoinf.2020.101094>)
4. Ackleh, A.S.; Chiquet, R.A.; Ma, B.; Tang, T.; Caswell, H.; Veprauskas, A.; Sidorovskaia, N. (2017). Analysis of lethal and sublethal impacts of environmental disasters on sperm whales using stochastic modeling. *Ecotoxicology*, 1-11. doi:10.1007/s10646-017-1813-4
5. Sidorovskaia, N.A. and Li, K. (2016). "Decadal evolution of the Northern Gulf of Mexico soundscapes," *Proceedings of Meetings on Acoustics*, 27(1), 040014, doi: 10.1121/2.0000382
6. Ziegwied, A., Dobbin, V., Pierpoint, C., Sidorovskaia, N., Dyer, S. (2016). "Using Autonomous Surface Vehicles for Passive Acoustic Monitoring (PAM)," *OCEANS 2016 MTS/IEEE Monterey*, Monterey, CA, 2016, pp. 1-5., doi: 10.1109/OCEANS.2016.7761380
7. Chiquet, R.A., Ma, B., Ackleh, A.S, Pal, N., and Sidorovskaia, N. (2013). "Demographic analysis of sperm whales using matrix population models," *Ecological Modelling* 248, 71– 79
8. Ilyazov, R., R., Khilko, A. , Khobotov, A., Yakhno, V. , Sanin, A. , Sanina, O., Sidorovskaya, N., Figovsky, O., and Yakhno, T. (2012) "Dynamics of molecular self-assembly of drying liquid drop components: utilization of the phenomenon," "Scientific Israel - Technological Advantages" (SITA-Journal), **14**(1), 32 p.
9. Ackleh, A., Ioup, G.E., Ioup, J.W., Ma, B., Newcomb, J., Pal, N., Sidorovskaia, N., and Tiemann, C. (2012). "Assessing the Deepwater Horizon oil spill impact on marine mammal population through acoustics: endangered sperm whales," *J. Acoust. Soc. Am.* **131** (3), pp. 2306-2314.
10. Tiemann, Chris O., Jaffe, Jules S. , Roberts, Paul L. D. , Sidorovskaia, Natalia A., Ioup, George E. , Ioup, Juliette W. , Ekimov, Alexander , Lehman, Sean K. (2011). "Signal and image processing techniques as applied to animal bioacoustics problems," *Acoustics Today* **7** (3), pp. 35-43. **(invited featured article)**
11. Tashmukhambetov, A.M., Ioup, G.E., Ioup, J.W., Sidorovskaia, N.A., Newcomb, J.J. (2008). "3-Dimensional seismic array calibration study: experiment and modeling," *J. Acoust. Soc. Am.* **123**(6), 4094-4108.
12. Sidorovskaia, N.A. , Ioup, G.E., Ioup, J.W., Tashmukhambetov, A.M., Newcomb, J.J., Stephens, J.M., and Raybon, G.H. **(2006)**. "Modeling tools for 3-d airgun source characterization studies," *Proceedings of the 8-th European Conference on Underwater Acoustics*, edited by S.M. Jesus and O.C. Rodrigues, Carvoeiro, Portugal, 12-15 June, 2006, pp. 95-100.
13. Tashmukhambetov, A.M., Sidorovskaia, N.A., Ioup, G.E., Ioup, J.W., *et al* **(2006)** "3-d airgun source characterization and propagation modeling", in *SEG Technical Program Expanded Abstracts*, vol. **25**, pp.26-30, doi:10.1190/1.2370084 (presented at SEG meeting, New Orleans, October 2006)
14. Sidorovskaia, N.A., Tashmukhanbetov, A.M., Ioup, G.E., Ioup, J.W., Newcomb, J.J., Stephens, J.M., Walker, C., and Rayborn, G.H. (2005). "Littoral Acoustic Demonstration Center: Experimental and Modeling Capabilities for Assessment of the Environmental Impact of Acoustic Sources in the Gulf of Mexico," *Proceedings of the 9th World Multiconference on Systemics, Cybernetics and Informatics (WMSCI 2005)*, vol. IX, pp. 113-114 (Orlando, USA, July 2005) **(invited talk)**
15. Caruthers, J.W., Roman, D.A., Sidorovskaia, N.A., and Vinogradov, S. (2005). "Prospects and Techniques for Eddy-Resolving Acoustic Tomography in the Eastern Gulf of Mexico,"

- Proceedings of the 9th World Multiconference on Systemics, Cybernetics and Informatics (WMSCI 2005)*, vol. IX, pp. 106-107 (Orlando, USA, July 2005) (**invited talk**)
16. Newcomb, J.J., Sanders, W., Stephens, J.M., Walker, C., Brack, B., Rayborn, G.H., Sidorovskaia, N.A., Tashmukhambetov, A.M., Ioup, G.E., Ioup, J.W., and Chapin, S.R. (2005) "Calibration and Analysis of Seismic Airgun Data from an EARS Buoy," in *Proceedings of 23rd Annual Gulf of Mexico Information Transfer Meeting*, pp. 83-100 (January 2005) (**invited talk**)
 17. Ioup, G.E., Ioup, J.W., Sidorovskaia, N.A. *et al.* (2005) "Analysis of Bottom-Moored Hydrophone Measurements of Gulf of Mexico Sperm Whale Phonations," *Proceedings of 23rd Annual Gulf of Mexico Information Transfer Meeting*, pp. 109-136 (January 2005) (**invited talk**)
 18. Sidorovskaia, N. A. (2004). "Systematic studies of pulse propagation in ducted oceanic waveguides in normal mode representation," *The European Physical Journal, Applied Physics* **25** (2), 113-131.
 19. Sidorovskaia, N.A., Ioup, G.E., Ioup, J.W., and Caruthers, J.W. (2004). "Acoustic propagation studies for sperm whale phonation analysis during LADC experiments," in *HIGH-FREQUENCY OCEAN ACOUSTICS*, edited by Michael B. Porter, Martin Siderius, William A. Kuperman (AIP Conference Proceedings, 2004), pp. 288-295.
 20. Caruthers, J.W., Quiroz, E., Fisher, R., Meredith, R., Sidorovskaia, N.A., and the KauaiExGroup. (2004). "Side-Scan Sonar Survey Operations in Support of KauaiEx," in *HIGH-FREQUENCY OCEAN ACOUSTICS*, edited by Michael B. Porter, Martin Siderius, William A. Kuperman (AIP Conference Proceedings, 2004), pp. 366-372.
 21. Newcomb, J.J., Fisher, R., Field, R., Ioup, G.E., Ioup, J.W., Larue, J., Sidorovskaia, N.A., *et al.* (2003) "Using Acoustic Buoys to Assess Ambient Noise and Sperm Whale Vocalizations," *Proceedings of MMS-ITM Workshop*, pp. 269-276 (**invited talk**, January 2003)
 22. Newcomb, J.J., Fisher, R., Turgut, A., Field, R., Ioup, G.E., Ioup, J.W., Raybon, G.H., Kuczaj, S., Caruthers, J., Goodman, R., and Sidorovskaia, N.A. (2002). "Modeling and Measuring the Acoustic Environment of the Gulf of Mexico," *Proceedings of 21-st Annual Gulf of Mexico Information Transfer Meeting*, pp.509-521 (**invited talk**, January 2002)
 23. Sidorovskaia, N.A. (1997). "Time-domain study of acoustic pulse propagation in an ocean waveguide using a new normal mode model," *Ph.D. Dissertation, University of New Orleans, May 1997*.
 24. Sidorovskaya, N.A. and Khil'ko, A.I. (1995). "Partially coherent acoustic images in layered refractive waveguides," *Izvestiya Vysshikh Uchebnykh Zavedenii, Radiofizika* (Russia) **38**(1-2), 127-133. [English transl.: *Radiophysics and Quantum Electronics* (USA) **38**(1-2), 85-88 (1995)].
 25. Antonets, M.A., and Sidorovskaya, N.A. (1993). "Estimation of Random-Signal-Source characteristics by field measurement," *Izvestiya Vysshikh Uchebnykh Zavedenii, Radiofizika* (Russia) **36** (8), 836-839. [English transl.: *Radiophysics Quantum Electron.* (USA) **36** (8), 573-575 (1993)].
 26. Bespalov, P.A., and Sidorovskaya, N.A. (1992). "Dimension of ELF-chorus," *Geomagnetism and Aeronomy*, **vol. 32**, No 1, pp. 152-155, Moscow, "Nauka", 1992 (in Russian and translated in English).

MAGAZINES, PROCEEDINGS, AND REPORTS

1. Sidorovskaia, N. (2020). Assessment of ocean ambient sound levels in the northern Gulf of Mexico, November 2019 – June 2020: autonomous Environmental Acoustic Recording System (EARS) buoys. Preliminary Data processing Report. Prepared for the Bureau of Ocean Energy Management (BOEM), United States Department of the Interior under Contract No. M17PC00001, Task Order M17PD00011, issued to HDR Inc., Vienna, VA, USA. Prepared by University of Louisiana at Lafayette, Lafayette, LA, USA. November 2020, 41 pp.
2. Sidorovskaia, N., and Bhattarai, K. (2020). Assessment of ocean ambient sound levels in the northern Gulf of Mexico, April 2019 – November 2019: autonomous Environmental Acoustic Recording System (EARS) buoys. Preliminary Data processing Report. Prepared for the Bureau of Ocean Energy Management (BOEM), United States Department of the Interior under Contract No. M17PC00001, Task Order M17PD00011, issued to HDR Inc., Vienna, VA, USA. Prepared by University of Louisiana at Lafayette, Lafayette, LA, USA. March 2020, 44 p.
3. Sidorovskaia, N., and Bhattarai, K. (2019). Assessment of ocean ambient sound levels in the northern Gulf of Mexico, October 2018 – April 2019: autonomous Environmental Acoustic Recording System (EARS) buoys. Preliminary Data processing Report. Prepared for the Bureau of Ocean Energy Management (BOEM), United States Department of the Interior under Contract No. M17PC00001, Task Order M17PD00011, issued to HDR Inc., Vienna, VA, USA. Prepared by University of Louisiana at Lafayette, Lafayette, LA, USA. November 2019, 39 p.
4. Sidorovskaia, N., and Bhattarai, K. (2019). Assessment of ocean ambient sound levels in the northern Gulf of Mexico, May 2018 – October 2018: autonomous Environmental Acoustic Recording System (EARS) buoys. Preliminary Data processing Report. Prepared for the Bureau of Ocean Energy Management (BOEM), United States Department of the Interior under Contract No. M17PC00001, Task Order M17PD00011, issued to HDR Inc., Vienna, VA, USA. Prepared by University of Louisiana at Lafayette, Lafayette, LA, USA.
5. Sidorovskaia, N. 2019. Eavesdropping on the Gulf of Mexico. Environment Coastal & Offshore, Special Issue “Ocean Sound”, 68-71
6. Sidorovskaia, N., Comeaux, D., Greenhow, D., Griffin, S., Heimlich, S., Pierpoint, C., Richter, C., and Scala, L. (2017). Proc. LADC-GEMM 2017 Gulf of Mexico Experiment. Lafayette, LA (LADC-GEMM), 61 p.
7. Sidorovskaia, N., Griffin, S., and Richter, C., 2016. *Proc. LADC-GEMM 2016 Gulf of Mexico Experiment. Part III: Long-Term Mooring Deployment Cruise*. Lafayette, LA (LADC-GEMM), 16 p.
8. Sidorovskaia, N., Ames, A., Fuselier, J., Greenhow, D., Griffin, S., Heath, B., Lingsch, B., Marks, K., Ninke, T, Pierce, S., Pierpoint, C., Richter, C., Royston, J., Rutter, D., Scala, L., and Seward, G. (2015). Proc. LADC-GEMM 2015 Gulf of Mexico Experiment. Lafayette, LA (LADC-GEMM), 50 p.
9. 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), 24p.
10. Dyer, S., Pierpoint, C., Sidorovskaia, N. (2015). “ASVs for Passive Acoustic Monitoring: Keeping Track of Marine Wildlife in the Gulf Post-Deepwater Horizon,” Sea Technology, October 2015, 15-18

11. Малеханов, А.И., Бородина, Е.Л., Сидоровская, Н.А., Смирнов, И.П., and Хилько, А.И. (2013). "Формирование устойчивых пространственно-временных структур при распространении широкополосных импульсов в океанических волноводах и их разрушение за счет рассеяния на неоднородностях," [Alexander I. Malekhanov, Natalia A. Sidorovskaia, Alexander I. Khil'ko, Elena L. Borodina, Ivan P. Smirnov. "Formation of stable space-time structures at propagation of broadband pulses in oceanic waveguides and their destruction at the scattering on randomly distributed inhomogeneities."] In "Ocean acoustics", *Proceedings of the XIV th L.M. Brekhovskikh's conference*, Москва, ГЕОС 2013 г., pp. 384-387 [In Russian with summary translated in English]
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- Natalia A. Sidorovskaia, "Academic environment and dynamics in response to extreme events: Theory and Practice (Katrina Lessons)," **Invited talk**, 2008 APS March Meeting, March 10–14, 2008, New Orleans, Louisiana
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- Natalia A. Sidorovskaia and Michael F. Werby, "Vertical acoustic profiles and the extraction of ocean properties from broad band pulses in strongly refractive shallow water wave guides," *the 2nd International Conference on Theoretical and Computational Acoustics*, Book of Abstracts, Honolulu, Hawaii, 21-25 August 1995.
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- Nataly A. Sidorovskaia and Michael F. Werby, "Analysis of spatial-time characteristics of broad-band pulse propagating through ocean sound channels by using shallow water acoustical mode propagation model," *J. Acoust. Soc. Am.* **97** (5), Pt. 2, p. 3317, May 1995.
- M.F. Werby and N.A. Sidorovskaia, "Animations of pulse signals scattering from submerged resonating structures," *J. Acoust. Soc. Am.* **97** (5), Pt. 2, p. 3283-3284, May 1995.
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- M. F. Werby and N. A. Sidorovskaia , "Do pseudo-Scholte resonances exist?," *J. Acoust. Soc. Am.* **46** (5), Pt. 2, p.3336, (the 128th Meeting of the ASA, Austin, Texas, November 1994).
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- N. A. Sidorovskaia, A. I. Khil'ko, and M. F. Werby, "Time-domain propagation of signals in a strongly refractive shallow water wave guide and the extraction of ocean properties," *J. Acoust. Soc. Am.* **46** (5), Pt. 2, p.3354, (the 128th Meeting of the ASA, Austin, Texas, November 1994).
- N. Sidorovskaia and V. Turchin, "Diagnostics of noise broad band acoustical sources from near-field measurements," *J. Acoust. Soc. Am.* **95**(5), Pt. 2, (127th Meeting of the Acoustical Society of America), p. 2894, May 1994.
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INVITED TALKS AND SEMINARS NOT INCLUDED AS PUBLICATIONS

1. Sidorovskaia, N. (2019) "Big data paradigm in ocean acoustic ecology," Applications of Big Data and High-Performance Computing in Earth Sciences, AGU Workshop, December 8, 2019
2. Sidorovskaia, N.A. (2019). "Gulf of Mexico soundscapes as indicators of ecological stressors," Department of Physics, East Carolina University, April 12, 2019
3. Sidorovskaia, N.A., and Ackleh, A.S. (2018). Webinar in prep. for Marine Mammal Synthesis Workshop "LADC-GEMM Consortium: Marine Mammal Passive Acoustic Research and Modeling", October 2018
4. Sidorovskaia, N.A., and Ackleh, A. (2018). "LADC-GEMM Consortium: Marine Mammal Passive Acoustic Research and Modeling," GoMRI Webinar for Marine Mammal Synthesis workshop, Lafayette, LA, October 2, 2018.
5. Sidorovskaia, N.A., and Veprauskas, A. (2018). "LADC-GEMM Consortium: Studying the impact of environmental stresses on marine mammals: acoustic monitoring, data analytics, and population models," GoMRI Research Webinar, Lafayette, LA, May 30, 2018.
6. Adesiyun, O., Richter, C., Acton, G., Sidorovskaia, N., Sierro, F., Xuan, C., Verosub, K., 2016: Rock magnetic and paleomagnetic study of sediments from IODP Site U1389 (West Iberian Margin). GSA South-Central Section Meeting, March 22-23, 2016, Baton Rouge, Louisiana.
7. Adesiyun, O., Richter, C., Acton, G., Sidorovskaia, N., Sierro, F., Xuan, C., Verosub, K., 2016. Rock magnetic and paleomagnetic study of sediments from IODP Site U1389 (West Iberian Margin). NSBE Annual Convention, Boston, March 23-27, 2016.
8. New Consortium Presentation, "Littoral Acoustic Demonstration Center – Gulf Ecological Monitoring and Modeling (LADC-GEMM)", Oil Spill Science Conference, Houston, February 2015.
9. Seminar, College of Sciences, UL Lafayette (February 23, 2015)
10. Seminar, Physics Department, UL, Lafayette (February 2015)
11. Seminar, Institute of Applied Physics (Russia), November 2012
12. Seminar, Nizhny Novgorod State University (Russia), November 2012
13. Seminar, LGS, Lafayette, LA, May 2012
14. Seminar, Physics Department, UL Lafayette November 2011
15. Marine Mammal Commission, May 11, 2011 New Orleans
16. Poster, LSU, April 2011

17. Azmy S. Ackleh, Nabendu Pal, Natalia Sidorovskaia , “Modeling Short Term Dynamics of Marine Mammal Populations Near the BP Oil Spill Site (Gulf of Mexico) ,” NSF Sponsored Oil Spill Conference in New Orleans, Oct 31 – Nov 2, 2010 (poster presentation)
18. Sidorovskaia, N.A., “Environmental impact assessment of seismic exploration in the ocean using acoustics,” Department of Physics, University of New Orleans, April 18, 2007
19. Sidorovskaia, N.A., “Environmental Impact Assessment of Seismic Exploration in the Ocean,” SWLGS, October 9, 2007.
20. Sidorovskaia, N.A., “Waveguide Propagation Modeling as a Tool for Processing Experimental Data in Underwater Acoustics,” Seminar presented at Physics Department, UL Lafayette, October 25, 2006
21. Sidorovskaia, N.A., “FMCE Testing and Preparation for ILD for the Coming Semester,” Seminar presented at AAPT Workshop, Syracuse, NY, June 2006
22. Sidorovskaia, N.A., “Passive acoustics as a tool for environmental impact assessment,” Seminar presented at RABS, UL Lafayette, February 06, 2006
23. Natalia A. Sidorovskaia, “Underwater acoustics as a tool for studying environmental impact of human activities in the ocean,” Seminar at Southeastern Louisiana University, December 2, 2005
24. Natalia A. Sidorovskaia et al, “Airgun Calibration and Sperm Whale Identification from Gulf of Mexico Acoustic Data,” Seminar at the Physics Department, UL Lafayette, November 2, 2005
25. Natalia A. Sidorovskaia, Arslan Tashmukhambetov, Physics Department, UL Lafayette, George loup and Juliette loup, Physics Department, UNO, “LADC 2003 seismic calibration experiment: Modeling acoustic energy distribution from seismic exploration array,” Seminar at the University of New Orleans, Physics Department, April 6, 2005
26. Natalia A. Sidorovskaia, “Littoral Acoustic Demonstration Center (LADC): Assessment of environmental impact of acoustic exploration of the Northern Gulf of Mexico,” **Invited seminar** at National Center for Physical Acoustics, Oxford, Mississippi, March 30, 2005
27. S. Vinogradov, J.W. Caruthers, and N.A. Sidorovskaia, “The Use of Tomographic Data in Numeric Simulation of Eddy Propagation into the Northeastern Gulf of Mexico by Assimilations into the Numeric Model,” presented at the ASLO/TOS 2004 meeting, Honolulu, Feb. 2004.
28. Joal Newcomb, Robert Fisher, and Robert Field, Naval Research Laboratory-Stennis Space Center, Grayson Rayborn, Stan Kuczaj, Jerald Caruthers, Ralph Goodman, Andrew Wright, Rachel Thames, Chris Walker, and Sergey Vinogradov, University of Southern Mississippi, George loup, Juliette loup, and James Larue, University of New Orleans, Natalia Sidorovskaia, Ilya Udovydchenkov, and Irina Rypina, University of Louisiana at Lafayette, Mark Snyder, Mike Wild, and Wesley Hillstrom, Naval Oceanographic Office, “Ambient Noise, Propagation, and Sperm Whale Clicks at the LADC Experimental Site,” presented at the Minerals Management Service Sperm Whale Seismic Study, Houston, TX, 18-21 Nov 2003 (**invited talk**)
29. Natalia A. Sidorovskaia, “Individualization of Sperm Whales Vocalizations”, Invited seminar at Department of Marine Science, The University of Southern Mississippi, Stennis Space Center, April 25, 2003
30. Natalia A. Sidorovskaia, “Ocean acoustic noise and charismatic megafauna,” Seminar at Physics Department, UL Lafayette, April 2, 2003

31. Natalia A. Sidorovskaia, "New normal mode simulation code SWAMP and its practical applications," **Invited seminar** at National Center for Physical Acoustics, Oxford, Mississippi, January 23, 2003.
32. Jerald W. Caruthers, Grayson Rayborn, Ralph Goodman, George Ioup, Natalia Sidorovskaia, Robert Field, Joal Newcomb, and Robert Fisher, "Prospects of Ocean Acoustic Tomography of the Gulf of Mexico," presented at Naval Research Laboratory Symposium on Operational Oceanography and Remote Sensing, sponsored by the Alliance for Marine Remote Sensing, London, March 5-7, 2002 (**invited talk**, no publication)
33. Natalia A. Sidorovskaia, "How do we try to solve the inverse problem in oil exploration?," **Invited talk** at Sigma Xi, University of Louisiana at Lafayette Chapter, February 15, 2001
34. Natalia A. Sidorovskaia, "Risk-reducing Techniques in Oil Exploration," Seminar at the Physics Department, The University of Louisiana at Lafayette, January 31, 2001
35. Natalia A. Sidorovskaia, "Modern Approaches in Seismic Depth Imaging," Seminar at the University of New Orleans, Physics Department, March 10, 1999
36. Natalia A. Sidorovskaia and Michael F. Werby, "Ocean layering models and mode trapping in sublayers for high frequency propagation," Seminar at the Woods Hole Oceanographic Institute, July 26, 1995.
37. Natalia A. Sidorovskaia, "Acoustical pulse propagation through ocean channels," Seminar at the University of New Orleans, Physics Department, February 22, 1995.
38. Natalia A. Sidorovskaia and Michael F. Werby, "The propagation of sound in shallow water ducted wave guides to high frequency for both the CW and pulse cases: Discussions of results," Talk at the University of Miami, RSMAS, January 12, 1995.

PUBLIC-RELEASED DATASETS TO SUPPORT RESEARCH AND EDUCATION

- Sidorovskaia, N., and Li, K. (2017). Acoustic detections of cetaceans from bottom-moored Environmental Acoustic Recording System (EARS) buoys in the northern Gulf of Mexico 2017-06-09 to 2017-10-10. Distributed by: Gulf of Mexico Research Initiative Information and Data Cooperative (GRIIDC), Harte Research Institute, Texas A&M University-Corpus Christi, <https://data.gulfresearchinitiative.org/data/R4.x261.000:0023>, doi:10.7266/n7-4zw6-ap48
- Sidorovskaia, N., and Li, K. (2017). Acoustic detections of cetaceans from real-time Environmental Acoustic Recording System (EARS) buoy in the northern Gulf of Mexico 2016-09-10 to 2017-01-31, Distributed by: Gulf of Mexico Research Initiative Information and Data Cooperative (GRIIDC), Harte Research Institute, Texas A&M University-Corpus Christi, <https://data.gulfresearchinitiative.org/data/R4.x261.000:0027>, doi:10.7266/n7-hs5d-ef17
- Sidorovskaia, N., and Li, K. (2017). Beaked whale detections from stage 3 using a three-stage energy detector and classifier in the northern Gulf of Mexico, June-October 2015. Distributed by: Gulf of Mexico Research Initiative Information and Data Cooperative (GRIIDC), Harte Research Institute, Texas A&M University-Corpus Christi, doi:10.7266/N7V69GNZ

TEACHING/MENTORING EXPERIENCE

Undergraduate Courses

1. Introduction to Physics I (coding: Phys 207, undergraduate level): algebra-based classical mechanics, waves, and thermodynamics for non- science majors,
2. General Physics I (coding: Phys 201, undergraduate level): calculus-based classical mechanics, thermodynamics, and waves for science and engineering majors,
3. Honors General Physics I (coding: Phys 203, undergraduate level): classical and relativistic mechanics, mechanical waves, fluids and heat,
4. General Physics II (coding: Phys 202, undergraduate level): calculus-based electromagnetism theory, optics, and relativistic mechanics for science and engineering majors,
5. Honors General Physics II (coding: Phys 204, undergraduate level):
6. Physics Laboratory II (coding: Phys 216, undergraduate level): experiments illustrating principles in electricity, magnetism, optics, and atomic physics.
7. Classical mechanics I, (coding: Phys 323), includes the development of the distance-learning courses for shared delivery at SELU, UNO, and UL Lafayette (first delivered fall 2011)

Graduate Courses

1. Physical Acoustics (coding: Phys 420 advanced undergraduate and graduate credit): propagation of acoustical waves through matter, incl. vibrational motion, plane waves, reflection and refraction, spherical waves, sound absorption and scattering, sound sources, sonar equation
2. Advanced Mechanics (coding: Phys. 423 advanced undergraduate and graduate credit): Lagrangian and Hamiltonian dynamics of mechanical system,
3. Advanced Electromagnetic Theory (coding: Phys. 424 advanced undergraduate and graduate credit): Maxwell's equations, electromagnetic waves, and the Special Theory of Relativity
4. Computational Physics (coding: Phys. 411 advanced undergraduate and graduate credit): numerical methods in physics, algorithm development in MatLab
5. Topics in Computational Physics "Modern Signal Processing" (coding: Phys. 523 graduate level): matrix theory, statistical analysis, classical spectral estimators, parametric modeling and high-resolution spectral estimators
6. Topics in Computational Physics "Machine Learning" (coding: Phys. 523 graduate level): supervised and unsupervised machine learning algorithms
7. Directed individual studies (coding: Phys. 597/598): computational underwater acoustics, scattering theory, and signal processing topics

Graduate students/Post-doctoral Fellows

Post-Doctoral Research Associates

Kun Li (2015-present)

Thomas Guilment (2018-2020)

Chair, Doctoral Program in Earth and Energy Sciences

Naomi Mathew (2020-present)

Chair, Master of Science in Physics, UL Lafayette

Ilya Udovydchenkov, Spring 2003, "Acoustic Modeling Tools in Studying the Gulf of Mexico Environment"

Blake A. Richard, Spring 2005, "Sperm Whale Detection and Classification in Acoustic Data"

Arslan Tashmukhambetov, Spring 2005, "Modeling of Angular and Range Acoustic Energy Distributions from a Seismic Exploration Array in the Northern Gulf of Mexico"

Anca Niculescu, Spring 2010 (Non-Thesis option)

Fatemeh Karbalaei Saleh, Spring 2014, "Paleomagnetism and PIXE Analysis of a Sediment Core from Bennett County, South Dakota"

Sakib Mahmud, Fall 2017, "Comparing the Performance of Bottom-Moored and Unmanned Surfaced Vehicle Towed Passive Acoustic Monitoring Platforms for Marine Mammal Detections"

Bibek Khadka, Spring 2020

Keshab Bhattarai, Spring 2020

Member of the Ph.D. Committee/Ph.D student co-mentoring

S. Vinogradov, December 2004, "The use of Ocean Tomographic Observations in Numeric Simulation of Mesoscale Oceanic Circulation in the Northern Gulf of Mexico," Dissertation, Univ. of Southern Mississippi

Scott McDermott, Computer Science Dept., UL Lafayette

Arslan Tashmukhambetov, July 2009, Department of Physics, UNO

Baoling Ma, Department of Mathematics, UL Lafayette

Tingting Tang, Department of Mathematics, UL Lafayette

Md I Hossain, Department of Mathematics, UL Lafayette

Member, M.S. Committee, UL Lafayette

Robert Minvielle, Summer 2001, "Measurement of Velocity and Attenuation Coefficient of Acoustic Waves in Marsh Water and Sediment"

Frank Nelson Womack, Fall 2004, "Development of a Drop Tower to Study the Triboluminescence of ZnS:Mn with Attention to Possible Application to Spacecraft"

Ross Fontenot, Spring 2010

Andra Mandru, Spring 2010

Jack Manuel, Summer 2011

Boyko Perfanov, Fall 2012

Alex Sylvester, Fall 2015

Stephen Williams, Spring 2016

Mathbar Raut, Spring 2016
Jacque Meche, Fall 2016
Prasanna Gunawardana, Summer 2016
Kevin Pitre, Fall 2016
Alexander Beck (Geosciences), Fall 2017
Peter Achi, Spring 2018
Brian Dye (Geosciences), Spring 2018
Adam Trahan, Fall 2018
Sonny Osunkwo, Fall 2018
John Miller, Spring 2019

Member, Comprehensive Exam Committee, UL Lafayette

Irina Rypina, Spring 2003
Natalia Zhelezina, Spring 2003
Ildar Tamendarov, Spring 2005
Joshua Riner, Spring 2011
Mark Roberts, Spring 2011
Lia Kobakhidze, Fall 2012
Jacque Meche, Spring 2016
Mathbar Raut, Spring 2016