

## **CURRICULUM VITAE**

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### **I. EDUCATION**

- 1997 – Ph.D. in Engineering and Applied Science from the University of New Orleans, USA.
- 1996 – M.S. in Applied Physics from the University of New Orleans, USA
- 1990 – M.S. in Radiophysics from Gorky State University, Russia

### **II. EMPLOYMENT**

- 2012-... Professor and Chairperson, Physics Department, UL Lafayette, USA
- 2006-2012 – Associate Professor and Chairperson (since August 2007), Physics Department, UL Lafayette, USA
- 2000-2006 – Assistant Professor, Physics Department, UL Lafayette, USA
- 1998-2000 – Onsite Consultant, Landmark Graphics Corporation, A Halliburton Company
- 1997-1998 – Professional Contractor, Physics Dept., University of New Orleans, USA
- 1996 – Visiting Research Associate, Division of Applied Marine Physics, RSMAS, University of Miami, Miami, USA
- 1995-1996 – Research Associate, Physics Dept., University of New Orleans, USA
- 1994 – Research Assistant, Physics Dept., University of New Orleans, USA
- 1992-1994 – Junior Researcher, Hydrophysics Division, Institute of Applied Physics of Russian Academy of Sciences, Nizhny Novgorod, Russia

- 1990-1992 -- Probationer-Researcher, Hydrophysics Division, Institute of Applied Physics of Russian Academy of Sciences, Nizhny Novgorod, Russia

### III. RESEARCH

#### III.1 List of publications

##### III.1.A 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

##### III.1.B 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. M.F. Werby and N.A. Sidorovskaia, "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. Yu.K. Postoenko, N.A. Sidorovskaya, et al., "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).

### III.1.C Peer-reviewed publications:

1. Sidorovskaia, N.A. and Li, K. "Decadal evolution of the Northern Gulf of Mexico soundscapes," Proc. of Meetings on Acoustics (under review)
2. 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
3. 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.
4. 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.
5. 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**)
6. 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.
7. 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.

8. 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)
9. 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**)
10. 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**)
11. 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 23<sup>rd</sup> Annual Gulf of Mexico Information Transfer Meeting*, pp. 83-100 (January 2005) (**invited talk**)
12. 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 23<sup>rd</sup> Annual Gulf of Mexico Information Transfer Meeting*, pp. 109-136 (January 2005) (**invited talk**)
13. 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.
14. 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.

15. 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.
16. 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)
17. 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)
18. 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.*
19. 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)].
20. 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)].
21. Bepalov, 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).

### III.1.E Conference Proceedings articles:

1. Ziegwied, A., Dobbin, V., Pierpoint, C., Sidorovskaia, N., Dyer, S. (2016). "Using Autonomous Surface Vehicles for Passive Acoustic Monitoring (PAM)," Proc. of Oceans'16, MTS/IEEE, Monterey, CA, USA (Sept.19-23, 2016) (accepted for publication).
2. 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.
3. 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), 24 p.
4. 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
5. 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]
6. Сидоровская, Н.А., Ioup, G.E., Ioup, J.W., Tashmukhambetov, A.M., Ekimov, A.E. (2011). "Использование пассивных акустических методов для изучения влияния промышленной 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]

7. Ioup, G.E., Ioup, J.W., Pflug, L.A., Tashmukhambetov, A.M., Sidorovskaia, N.A., Schexnayder, P., Tiemann, C.O., Bernstein, A., Kuczaj, S.A... Rayborn, G.H., Newcomb, J.J., Carlson, R., and Ekimov, A.E. (2009). "EARS Buoy Applications by LADC: I. Marine Animal Acoustics," *Proceedings of the OCEANS 2009 MTS/IEEE BILOXI Conference*, ISBN CD-ROM: 978-0-933957-38-1, 9 pages, 2009
8. Newcomb, J.J., Tashmukhambetov, A.M., Ioup, G.E., Ioup, J.W., Sidorovskaia, N.A., Stephens, J.M., Rayborn, G.H., and Summerfield, P. (2009). "EARS Buoy Applications by LADC: II. 3-D Seismic Airgun Array Characterization," *Proceedings of the OCEANS 2009 MTS/IEEE BILOXI Conference*, ISBN CD-ROM: 978-0-933957-38-1, 7 pages, 2009
9. Rosenfield, D. A., Caruthers, J. W., Nechaev, D. A., Sidorovskaia, N. A., Ioup, G. E., Ioup, J. W., and Yaremchuk, M. I. (2009) "Using Acoustic Tomography to Monitor Deep Ocean Currents in the Eastern Gulf of Mexico," *Proceedings of the OCEANS 2009 MTS/IEEE BILOXI Conference*, ISBN CD-ROM: 978-0-933957-38-1, 3 pages, 2009
10. Sidorovskaia, N.A. (2003) "Waveguide propagation modeling and its applications," in *Proceedings of the First Workshop on Information and Systems Technology*, (New Orleans, UNO, May 2003).
11. Sidorovskaia, N.A. (2003) "A new normal mode program SWAMP as a tool for modeling scattering effects in oceanic waveguides," in "*Modelling and Experimental Measurements in Acoustics III*," edited by D. Almoza, C.A. Brebbia, R.Hernandez, WIT Press 2003, pp. 267-275.
12. Sidorovskaia, N.A., Udovychenkov, I.A., Caruthers, J.W., Kamenkovich, V., and Ioup, G.E. (2002). "Acoustic Pulse Propagation Studies in the Gulf of Mexico," in *Proceedings of OCEANS2002 MTS/IEEE Conference and Exhibition*, pp. 1434-1437 (October 29-31, 2002, Biloxi, MS)
13. Sidorovskaia, N.A. (2001) "A New Numerical Technique for the Unification of Propagation and Scattering Problems in Underwater Acoustics," *Proceedings of IMECE2001: 2001 ASME International Mechanical Engineering Congress and Exposition*, NCA-Vol. 28, pp. 281-287, November 11-16, 2001, New York, NY
14. Sidorovskaia, N.A., Schneider, J.M. (2000). "Risk-reducing technique in seismic interpretation," *Proceedings of the Fifth European Conference on Underwater*

- Acoustics, ECUA 2000, Lyon, France, 10-13 July, 2000*, Ed.: Manell E. Zakharia, vol. 1, pp. 257-262.
15. J.M. Schneider and N.A. Sidorovskaia, "Illumination Studies for Imaging Subsalt Anomalies," *Proceedings of Offshore Technology Conference, Houston, TX, 3-6 May, 2000* (paper#: OTC 11983).
  16. N. A. Sidorovskaia, E. S. Lockard, and Rod Stafford, "Some Aspects of Time-to-Depth Conversion for Depth Imaging," *Proceedings of Offshore Technology Conference, Houston, TX, 3-6 May, 1999*, vol. 1, pp. 815-822.
  17. Natalia A. Sidorovskaia and Emmitt S. Lockard, "Velocity Dispersion as a Tool for Reservoir Imaging," *Proceedings of the Sixth Latin American and Caribbean petroleum Engineering Conference, Caracas, Venezuela, 21-23 April, 1999*.
  18. N. A. Sidorovskaia and M. F. Werby, "Broadband Pulse Signals and the Characterization of Shallow Water Oceanic Properties," *Proceedings of SPIE - Int. Soc. Opt. Eng., Orlando, FL, 19-21 April, 1995*, 2485, pp. 97-108.
  19. Sh. Fiks, N.A. Sidorovskaia, and V.I. Turchin, "Measurements of complex moving broad band acoustic radiators using near-field technique," *Proceedings of the 2nd European Conference on Underwater Acoustics, Copenhagen, Denmark, July 4-8, 1994*, vol. 2, pp.745-750
  20. Sh. Fiks, N.A. Sidorovskaia, and V.I. Turchin, "Diagnostics of noise acoustic sources," *Journal de Physique IV, Vol. 4, Colloque C5, Supplement au Journal de Physique III, 5*, pp. C5-1109-C5-1111, France, May 1994.
  21. Sh. Fiks, N.A. Sidorovskaia, and V.I. Turchin, "Reconstruction of spatial-time structure of complex acoustical sources from near-field measurements," *Proceedings of the Third International Congress on Air- and Structure-Borne Sound and Vibration, Montreal, Canada, June 13-15, 1994*, ed. by M.J. Crocker, pp. 1701-1708.
  22. N.A. Sidorovskaia, I.Sh. Fiks, and V.I. Turchin, "Remote sensing of moving sources with complex spatial-time structure," *Proceedings of SPIE - Int. Soc. Opt. Eng., Orlando, FL, 6-7 April, 1994*, 2234, pp. 169-177.
  23. N.A. Sidorovskaya, V.I. Turchin, "Time-Spatial Processing of Near-Field Measurements," *Proceedings of Quatorzieme Colloque GRETSI, Juan-Les-Pins, France*, pp. 301-304, 1993 (in English).



24. N.A. Sidorovskaya, V.I. Turchin, and I. Sh. Fiks, "Monitoring of moving noise acoustical sources," *Proceedings of II Session of Russian Acoustical Society, Moscow, 1993* (in English).
25. M.A. Antonets and N.A. Sidorovskaya, "Estimation of random signal source characteristics by field measurement," *Proceedings of the International Scientific School-Seminar, University of Nizhny Novgorod*, pp. 189-190, 1992 (in English).

### **III.1.F Published abstracts of the papers presented at the conferences:**

1. 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 (submitted)
2. Sidorovskaia, N.A. and Li, K. (2016). "Development of unsupervised classifier for beaked whale clicks," J. Acoust. Soc. Am. (5<sup>th</sup> 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)
3. 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).
4. 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
5. Ackleh, A.S.;Chiquet, R. A. ; Ma, B. ; Tang, T.;Caswell, H. ;Sidorovskaia, N Accessing the Impact of Environmental Disasters on Population Dynamics Using Stochastic Matrix Models LA/MS MAA Conference, February 25-27, Shreveport, LA
6. 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
7. 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
  8. Mellinger, D.K; Nieukirk, S.; Heimlich, S.; Sidorovskaia, N.; Pierpoint, C. (2016). Acoustic Assessment of Cetacean Population Responses to the Deepwater Horizon Oil Spill. 2016 Gulf of Mexico oil spill & ecosystem science conference, February 1-4, 2016, Tampa, FL (**invited**)
  9. 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.
  10. 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
  11. 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
  12. Natalia 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 Fransisco, CA
  13. Carl Richter, Lindsey Horton, Gary Acton, Natalia Sidorovskaia, Francisco Sierro, 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 Fransisco, CA

14. Juliette W. Ioup, George E. Ioup, Christopher O. Tiemann, Natalia A. Sidorovskaia and Arslan M. Tashmukhambetov (2013). "Identification of individual beaked whales in the northern Gulf of Mexico," *J. Acoust. Soc. Am.* 134, 3986 (2013), <http://dx.doi.org/10.1121/1.4830528>
15. Natalia Sidorovskaia, Azmy S. Ackleh, Christopher O. Tiemann, Juliette W. Ioup and George E. Ioup (2013). "Prospects for short-term and long-term passive acoustic monitoring of environmental change impact on marine mammals," *J. Acoust. Soc. Am.* 134 , 4176 (2013) , <http://dx.doi.org/10.1121/1.4831308>
16. Arslan M. Tashmukhambetov, George E. Ioup, Juliette W. Ioup, Natalia A. Sidorovskaia, Joal J. Newcomb, James M. Stephens, Grayson H. Rayborn and Phil Summerfield (2013). "Three-dimensional primary acoustic field characterization for a seismic airgun array," *J. Acoust. Soc. Am.* 134 , 4113 (2013) , <http://dx.doi.org/10.1121/1.4831104>
17. Natalia Sidorovskaia, Carl Richter, and Irina Rypina (2013). Deterministic chaos in geomagnetic reversals, presented as a poster (GP53C-1142) at the AGU 2013 meeting, San Fransisco, CA
18. Fatemeh Karbalaie Saleh, James Martin, Natalia Sidorovskaia, Carl Richter, and William A. Hollerman (2013). "Paleomagnetism, rock magnetism, and PIXE Analysis of Oligocene-Miocene sediments (Bennett County, South Dakota)," presented as a poster (GP43A-1170) at the AGU 2013 meeting, San Fransisco, CA
19. Natalia Sidorovskaia, Azmy 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.
20. Natalia Sidorovskaia, Azmy 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)

21. Arslan M. Tashmukhambetov, George E. Ioup, Juliette W. Ioup, Natalia 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)
22. Arslan M. Tashmukhambetov, George E. Ioup, Juliette W. Ioup, Natalia 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
23. George E. Ioup, Juliette W. Ioup, Christopher O. Tiemann, and Natalia 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
24. Natalia Sidorovskaia, Azmy Ackleh<sup>2</sup>, Nabendu 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
25. Sidorovskaia, Natalia, Ackleh, Azmy 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.
26. Jerald W. Caruthers, Natalia A. Sidorovskaia and Kurt Hansen (2010). "Projections on acoustic techniques and strategies in the Deepwater Horizon response and beyond," J. Acoust. Soc. Am. 128 , 2383. 160<sup>th</sup> ASA Meeting/7<sup>th</sup> Iberioamerican Congress of Acoustics, 17 th Mexican Congress on Acoustics, Cancun, Mexico, 15-19 November 2010 (2010) (**invited**)
27. Natalia Sidorovskaia, Christopher O. Tiemann, George E. Ioup, and Juliette W. Ioup, "Passive acoustic monitoring to assess marine mammal population trends in vicinity of the Deepwater Horizon oil spill," J. Acoust. Soc. Am. 128(4) Pt.2, 160<sup>th</sup> ASA Meeting/7<sup>th</sup> Iberioamerican

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28. Natalia Sidorovskaia, "Modeling of broadband acoustic energy evolution in dynamic ocean environments using high-performance computing resources," *J. Acoust. Soc. Am.* 128(4) Pt.2, 160<sup>th</sup> ASA Meeting/7<sup>th</sup> Iberioamerican Congress of Acoustics, 17 th Mexican Congress on Acoustics, Cancun, Mexico, 15-19 November 2010, p. 2334 (2010)
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30. Sidorovskaia, N., P. Schexnayder, G. E. Ioup, J. W. Ioup, C. O. Tiemann, A. Ekimov, J. Sabatier **(2010)**. "Contextual rhythmic analysis of beaked whale clicks for passive acoustic identification," *J. Acoust. Soc. Am.*, **127** (3) Pt. 2, 159<sup>th</sup> ASA Meeting/NOISE-CON, Baltimore, Maryland, 19-23 April, 2010, p. 2004 **(invited talk)**.
31. Ioup, G. E., J. W. Ioup, L. A. Pflug, C. O. Tiemann, N. A. Sidorovskaia **(2010)**. "Using click change detection to modify cluster analysis for acoustically identifying individual sperm whales with changing aspect," *J. Acoust. Soc. Am.*, **127** (3) Pt. 2, 159<sup>th</sup> ASA Meeting/NOISE-CON, Baltimore, Maryland, 19-23 April, 2010, p. 2004 **(invited talk)**.
32. Ioup, J.W., George E. Ioup, Lisa A. Pflug, Natalia A. Sidorovskaia, Philip Schexnayder, Christopher O. Tiemann, and Alan Bernstein **(2010)**. "Acoustic Identification of individual beaked whales using self-organizing maps for automated classification of clicks in Littoral Acoustic Demonstration Center (LADC) data," *J. Acoust. Soc. Am.*, **127** (3) Pt. 2, 159<sup>th</sup> ASA Meeting/NOISE-CON, Baltimore, Maryland, 19-23 April, 2010, p. 2004 **(invited talk)**.
33. Ioup, J.W., George E. Ioup, Lisa A. Pflug, Natalia A. Sidorovskaia, Christopher O. Tiemann, and Charles Thompson **(2010)**. "Clustering classification methods for acoustic applications including the analysis of clicking whale data," *J. Acoust. Soc. Am.*, **127** (3) Pt. 2, 159<sup>th</sup> ASA Meeting/NOISE-CON, Baltimore, Maryland, 19-23 April, 2010, p. 2042 **(invited talk)**.
34. Tashmukhambetov, Arslan M., George E. Ioup, Juliette W. Ioup, Natalia A. Sidorovskaia, Anca Niculescu, Joal J. Newcomb, James M. Stephens, Grayson H. Rayborn, and Phil Summerfield **(2010)**. "The three-dimensional acoustic field of

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37. Anca M. Niculescu, Natalia A. Sidorovskaia, Peter Achi, Arslan M. Tashmukhambetov, George E. Ioup, and Juliette W. Ioup, “Use of high performance computing resources for underwater acoustic modeling,” *J. Acoust. Soc. Am.*, 126 (4) Pt. 2, ASA Fall 2009 Meeting, San Antonio, TX, October 26-30, 2009, 2250
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42. Arslan M. Tashmukhambetov, George E. Ioup, Juliette W. Ioup, Natalia A. Sidorovskaia, Joal J. Newcomb, James M. Stephens, and Grayson H. Rayborn, "Source characterization study 2007: The three-dimensional primary field of a seismic airgun array," *J. Acoust. Soc. Am.*, 125 (4) Pt. 2, ASA Spring 2009 Meeting, Portland, Oregon, April 2009, 2539
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46. Arslan Tashmukhambetov, George E. Ioup, Juliette W. Ioup, , Natalia A. Sidorovskaia, Joal J. Newcomb, James M. Stephens, and Grayson H. Rayborn, "The characterization study 2007: A detailed three dimensional acoustic field measurements of a seismic airgun array," *J. Acoust. Soc. Am.* **124 (4(2))**, p. 2599, October 2008. (The 156<sup>th</sup> Acoustical Society of America meeting, November 10-14, 2008, Miami, Florida)
47. Natalia Sidorovskaia, Arslan Tashmukhambetov, George E. Ioup, and Juliette W. Ioup, "Using parallel programming and a three-dimensional visualization cave to map the acoustic energy distribution from a seismic array in the ocean," *J. Acoust. Soc.*

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48. 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
49. Arslan M. Tashmukhambetov, George E. Ioup, Juliette W. Ioup, and Natalia A. Sidorovskaia, “Modeling surface duct precursors for Littoral Acoustic Demonstration Center 2003 (LADC03) seismic calibration experiment,” *J. Acoust. Soc. Am.* **122** (5(2)), p. 2942, November 2007. (The 154<sup>th</sup> Acoustical Society of America meeting, 27 November – 1 December, 2007, New Orleans, Louisiana)
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51. George E. Ioup, Juliette W. Ioup, Natalia A. Sidorovskaia, and Arslan M. Tashmukhambetov, “Identifying Individual Sperm and Beaked Whales from the Properties of their Clicks,” 3<sup>rd</sup> International Workshop on the Detection and Classification of Marine Mammals Using Passive Acoustics, 24-26 July 2007, Boston, MA, USA, p.11.
52. Natalia A. Sidorovskaia, Arslan M. Tashmukhambetov, George E. Ioup, and Juliette W. Ioup, “Modeling of Sound Exposure Levels for Seismic Exploration Arrays and Comparison with Experimental Measurements,” 3<sup>rd</sup> International Workshop on the Detection and Classification of Marine Mammals Using Passive Acoustics, 24-26 July 2007, Boston, MA, USA, p.22.
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61. Arslan Tashmukhambetov, Natalia A. Sidorovskaia, George E. Ioup, and Juliette W. Ioup, "Modeling of angular and range acoustic energy distribution from seismic

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62. Natalia A. Sidorovskaia, Ilya A. Udovydchenkov, Irina A. Rypina, George E. Ioup, Juliette W. Ioup, etc., “Propagation modeling for sperm whale acoustic clicks in the northern Gulf of Mexico,” *J. Acoust. Soc. Am.* **115 (5,(2))**, p. 2556, May 2004. (The 147<sup>st</sup> Acoustical Society of America meeting, May 24-28 2004, New York, NY)
63. George E. Ioup, Juliette W. Ioup, James P. Larue, Natalia A. Sidorovskaia, Stan A. Kuczaj, Grayson H. Rayborn, and Christopher D. Walker, “Spectrogram analysis of low to mid frequency marine mammal clicks,” *J. Acoust. Soc. Am.* **115 (5,(2))**, p. 2556, May 2004. (The 147<sup>st</sup> Acoustical Society of America meeting, May 24-28 2004, New York, NY)
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66. Sergey Vinogradov, Jerald W. Caruthers, ..., Natalia A. Sidorovskaia etc., “Physical oceanography and acoustic propagation during LADC experiment in the Gulf of Mexico in 2001,” *J. Acoust. Soc. Am.* **113 (4)**, p. 2332, April-May 2003. (The 145<sup>st</sup> Acoustical Society of America meeting, 28 April-2 May 2003, Nashville, TN)
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70. M.F. Werby and N.A. Sidorovskaia, "Rapid Method to Obtain Normal Mode Eigenvalues in a Layered Ocean," *1998 SIAM Annual Meeting*, July 1998, Toronto, Canada
71. M.F. Werby and N.A. Sidorovskaia, "Huygens Principle and a Range-Dependent Adaptive Coupled Normal Mode Method," *1998 SIAM Annual Meeting*, July 1998, Toronto, Canada
72. Natalia A. Sidorovskaia and Michael F. Werby, "Interductile energy transfer of high frequency pulse propagation in a two-ducted ocean waveguide in the Yellow Sea," *J. Acoust. Soc. Am.* **101**(5), Pt. 2, p. 3203, May 1997. (The 133<sup>rd</sup> meeting of the Acoustical Society of America)
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79. Michael F. Werby and Natalia A. Sidorovskaia, “ The theory and calculation of predicting the scattered signals from elastic spheroidal shells near reflecting and absorbing interfaces,” *the 2nd International Conference on Theoretical and Computational Acoustics*, Book of Abstracts, Honolulu, Hawaii, 21-25 August 1995.
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82. 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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85. Nataly A. Sidorovskaia and Michael F. Werby, “Analysis of spatial-time characteristics of broad-band pulse propagating through ocean sound channels by

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88. N. A. Sidorovskaia, Cleon Dean, and M. F. Werby, “The study of pulse signals from elastic spheroidal shells near reflecting interfaces,” *J. Acoust. Soc. Am.* **46** (5), Pt. 2, p.3336-3337, (the 128th Meeting of the ASA, Austin, Texas, November 1994).
89. 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).
90. M. F. Werby and N. A. Sidorovskaia, “Evidence for the existence of strong bending modes for signals scattered at oblique incidence from spheroidal shells,” *J. Acoust. Soc. Am.* **46**(5), Pt. 2, p.3336, (the 128th Meeting of the ASA, Austin, Texas, November 1994).
91. 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).
92. 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.
93. N.A. Sidorovskaya, V.I. Turchin, and I.Sh. Fiks, “The estimation of spectral correlation characteristics of moving noise radiators from radiated field,” *III Scientific-Technical Conference on "Methods of presentation and processing of random signals and waves", Khar'kov, 1993* (in Russian).
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95. P.A. Bespalov, N.A. Sidorovskaya, “Fractal dimension estimation of magnetospheric ELF chorus,” *Annales Geophysicae*,” Suppl.2, **vol. 10**, p. 344, 1992.
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### **III.1.G Invited talks, talks, and seminars not included as publications:**

1. 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.
2. 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.
3. New Consortium Presentation, “Littoral Acoustic Demonstration Center – Gulf Ecological Monitoring and Modeling (LADC-GEMM)”, Oil Spill Science Conference, Houston, February 2015.
4. Seminar, College of Sciences, UL Lafayette (February 23, 2015)
5. Seminar, Physics Department, UL, Lafayette (February 2015)
6. Seminar, Institute of Applied Physics (Russia), November 2012
7. Seminar, Nizhny Novgorod State University (Russia), November 2012
8. Seminar, LGS, Lafayette, LA, May 2012
9. Seminar, Physics Department, UL Lafayette November 2011
10. Marine Mammal Commission, May 11, 2011 New Orleans
11. Poster, LSU, April 2011
12. 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)
13. Sidorovskaia, N.A., “Environmental impact assessment of seismic exploration in the ocean using acoustics,” Department of Physics, University of New Orleans, April 18, 2007

14. Sidorovskaia, N.A., "Environmental Impact Assessment of Seismic Exploration in the Ocean," SWLGS, October 9, 2007.
15. 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
16. Sidorovskaia, N.A., "FMCE Testing and Preparation for ILD for the Coming Semester," Seminar presented at AAPT Workshop, Syracuse, NY, June 2006
17. Sidorovskaia, N.A., "Passive acoustics as a tool for environmental impact assessment," Seminar presented at RABS, UL Lafayette, February 06, 2006
18. 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
19. 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
20. Natalia A. Sidorovskaia, Arslan Tashmukhambetov, Physics Department, UL Lafayette, George Ioup and Juliette Ioup, 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
21. 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
22. 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.
23. 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 Ioup, Juliette Ioup, 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**)
24. 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
  25. Natalia A. Sidorovskaia, “Ocean acoustic noise and charismatic megafauna,” Seminar at Physics Department, UL Lafayette, April 2, 2003
  26. 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.
  27. 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)
  28. 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
  29. Natalia A. Sidorovskaia, “Risk-reducing Techniques in Oil Exploration,” Seminar at the Physics Department, The University of Louisiana at Lafayette, January 31, 2001
  30. Natalia A. Sidorovskaia, “Modern Approaches in Seismic Depth Imaging,” Seminar at the University of New Orleans, Physics Department, March 10, 1999
  31. 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.
  32. Natalia A. Sidorovskaia , “Acoustical pulse propagation through ocean channels,” Seminar at the University of New Orleans, Physics Department, February 22, 1995.



33. 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.

**Recent news media coverage:**

[theadvocate.com/news/11778331-123/ul-lafayette-team-heads-back-to](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&mobilecbypass>

<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>

**III.2 Research Funding**

**Summary:** In the last ten years at UL Lafayette, Dr. Sidorovskaia served as a PI or Co-PI on grants totaling over \$7,500,000, with the UL Lafayette portion over \$5,700,000

1. Summer Research Award Project, “Simulation of Acoustic Signal Distortion in Shallow Water”, *UL Lafayette*, May 29- August 4, 2001, \$3,500
2. “Computational Development of the Unified Approach to the Problems of Signal Propagation and Scattering in Ocean Environments,” Principal Investigator: Natalia A. Sidorovskaia, *Research Competitiveness Subprogram, Board of Regents Support Fund*, August 2001- June 30 2004, \$82,788

3. 2001-2002 Faculty Development Grant for workshop on fire ants acoustic research, *Office of Faculty Development and Academic Planning, UL Lafayette*, \$461 **(granted)**
4. 2002-2003 Faculty Development Grant, *Office of Faculty Development and Academic Planning, UL Lafayette*, \$360
5. “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,” Lead principal Investigators: George Ioup and Juliette Ioup, Physics Department, University of New Orleans, *ONR*, March 2001 – July 2004, UL funds: \$21,000 (as UNO subcontract), total amount of grant-\$2,000,000
6. “IAGC Airgun Calibration,” PI: Natalia A. Sidorovskaia, *NASA (2003)-Stennis-31*, September 12, 2003-December 31, 2003, \$3,665
7. “Facilitation of biomedical acoustics research at the Physics Department of UL Lafayette,” PI: Natalia A. Sidorovskaia, *NSF EPSCoR Pilot Funding for New Research*, Contract NSF/LEQSF(2005)-Pfund-27, 1 February 2005 – 31 January 2006, \$7,800.00
8. “Littoral Acoustic Demonstration Center: Seismic Airgun Characterization in the Gulf of Mexico,” UL Lafayette PI: Natalia A. Sidorovskaia, *International Association of Geophysical Contractors (On Behalf of the Industry Research Funding Coalition)*, April 2005 – May 2006, UL funds granted: \$8,474, UL additional funds approved: \$11,152
9. Travel Grant for Emerging Faculty, *NSF EPSCoR*, \$1,000
10. 2005-2006 Instructional Improvement Mini-Grants, “Implementation and Effectiveness assessment of Interactive Lecture Demonstrations in Introductory Physics Courses at UL Lafayette,” PIs: Natalia A. Sidorovskaia, William A. Hollerman, *Office of Faculty Development and Academic Planning, UL Lafayette*, September 2005-May 2006, \$1,381
11. “Using passive acoustics to detect Beaked Whales,” congressional funding through SPAWAR, 2007-2008, UL Lafayette funds \$65,500

12. “Source Characterization Study 2007. Data Analysis/Modeling component,” submitted to International Association of Oil and Gas Producers, E&P Sound and Marine Life JIP, June 2007- August 2008, \$57,662
13. “Development of the Ocean Acoustic propagation Model for the Louisiana Immersive Technologies Enterprise (LITE) environment”, Information Technology Initiative (ITI), UL Lafayette, \$49,164.
14. “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 Depts.)
15. Source Characterization Study 2007 (Data Analysis/Modeling Component) Amnd. 2, OGP, \$34,016 to UL, August 2010-June, 2011
16. Travel Grant from the Russian Academy of Sciences, 2012-2013, \$10,000
17. Travel Grant to attend the Third International Conference on the Effects of Noise on Aquatic Life, August 11-16, 2013, Budapest, Hungary, \$3,000
18. Travel Grant to attend and serve as a panelist at “Sound Exposure Modeling Workshop”, Washington, DC, January 7-9, 2014, up to \$3,000
19. Travel Grant for Women Speakers Program to sponsor the departmental seminar speaker, American Physical Society, 2014, \$500
20. UL Travel grant, \$1,000, Fall 2014, \$1,000
21. Littoral Acoustic Demonstration Center – Gulf Ecological Modeling and Monitoring (LADC-GEMM), BP/GOMRI, \$5,238,174, 2015-2017 (Lead PI & Director of the consortium), [www.ladcgemm.org](http://www.ladcgemm.org)

### **III.3 Current Research Interests**

- Environmental impact assessment by acoustic methods
- Marine mammals bioacoustics
- Development of computational models for sound propagation through the inhomogeneous waveguides (with emphasis on applications to ocean acoustics),
- Theoretical methods of scattering from objects in waveguides,

- Methods of the solutions of the hydrophysical inverse problems (noise source imaging, ocean acoustic tomography),
- Methods of visualizing and processing of experimental signals in underwater acoustics, including the adaptive processing of highly noisy data and development of novel methods of marine mammal phonation analysis,
- Depth imaging techniques in seismic signal processing,
- Seismic data management,
- Medical Acoustics
- Physics Education Research

### **III.4 Computer skills**

- Systems: Macintosh, PC - DOS, Windows NT, Windows-95, Norton, SGI, SUN - UNIX
- Programming Languages: FORTRAN, C, C++ , MatLab, LabView.
- Word processing: Microsoft Word, Latex, Word Perfect, Power Point
- March 2000 – Instructor Certification in DepthTeam Express (Landmark Graphics Corporation Depth Imaging Software)
- September 1999 - Customer Support Certification in DepthTeam Explorer (Landmark Graphics Corporation Depth Imaging Software)
- November 1998 – Customer Support Certification in DepthTeam Interpreter (Landmark Graphics Corporation Depth Imaging Software)

## **IV. TEACHING**

### **IV.1 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. Development of the first on-line courses in the department (Physics 323,423) for joint delivery at SELU, UNO, and UL Lafayette (first delivered fall 2011)

## **IV.2 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 systems,
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
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. Directed individual studies (coding: Phys. 597/598) on: computational underwater acoustics, scattering theory, and signal processing topics,
7. Thesis Research and Thesis (coding: Phys. 599),
8. Seminar (coding: Phys. 591,592,595,596).

### **IV.3 Graduate students**

#### **Chair of the Committee, Master of Science in Physics, UL Lafayette:**

1. Ilya Udovydchenkov, Spring 2003, "Acoustic Modeling Tools in Studying the Gulf of Mexico Environment"
2. Blake A. Richard, Spring 2005, "Sperm Whale Detection and Classification in Acoustic Data"
3. Arslan Tashmukhambetov, Spring 2005, "Modeling of Angular and Range Acoustic Energy Distributions from a Seismic Exploration Array in the Northern Gulf of Mexico"
4. Anca Niculescu, Spring 2010 (Non-Thesis option)
5. Fatemeh Karbalaei Saleh, Spring 2014
6. Sakib Mahmud, on-going

#### **Member of the Ph.D. Committee:**

1. 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
2. Scott McDermott, Computer Science Dept., UL Lafayette
3. Arslan Tashmukhambetov, July 2009, Department of Physics, UNO

#### **Member of the Committee, Master of Science in Physics, UL Lafayette:**

1. Robert Minvielle, Summer 2001, "Measurement of Velocity and Attenuation Coefficient of Acoustic Waves in Marsh Water and Sediment"
2. Frank Nelson Womack, Fall 2004, "Development of a Drop Tower to Study the Triboluminescence of ZnS:Mn with Attention to Possible Application to Spacecraft"
3. Ross Fontenot, Spring 2010
4. Andra Mandru, Spring 2010
5. Jack Manuel, Summer 2011
6. Boyko Perfanov, Fall 2012
7. Alex Sylvester, Fall 2015
8. Stephen Williams, Spring 2016
9. Mathbar Raut, Spring 2016

10. Jacque Meche, Fall 2016
11. Prasanna Gunawardana, Summer 2016
12. Kevin Pitre, Fall 2016

**Member of the Comprehensive Exam Committee, Master of Science in Physics, UL Lafayette (Non-Thesis Track):**

1. Irina Rypina, Spring 2003
2. Natalia Zhelezina, Spring 2003
3. Ildar Tamendarov, Spring 2005
4. Joshua Riner, Spring 2011
5. Mark Roberts, Spring 2011
6. Lia Kobakhidze, Fall 2012
7. Jacque Meche, Spring 2016
8. Mathbar Raut, Spring 2016

## **V. UNIVERSITY SERVICE**

1. 2016-present – Chair of the Department Head Council
2. University Committees:
  - 2000-current- member of the Graduate Faculty
  - 2008-current –member of the Graduate Curriculum Committee, Chair (2015-2016)
  - 2008-current –member of Faculty Senate
  - 2010-2012- member of Graduate Council
  - 2001-2007- member of the Graduate Appeal Committee
  - 2006-2007 – member of Graduate Faculty Review Committee
  - 2001-2007- mentor for LAMP scholars
  - 2003-2012- member of the Concert Committee
3. Judge for Literary Rally and Scientific Fair (2003, 2004,2005, 2006, 2007,2009,2010, 2011, 2012)
4. 2006-2007 –Graduate program Coordinator for Physics Department
5. 2012-2015 – Undergraduate student adviser (advice to more than 30 students)
6. October 2013, 2014 – organized first/second SMART (Science Meets ART) festival
7. October 2014 – Chair of the Inaugural Science Day Committee
8. Participation in UL Lafayette Mentoring Program
9. Participation in departmental recruiting efforts (six graduate students were recruited by Dr. Sidorovskaia)

## **VI. PROFESSIONAL SERVICE**

### **VI.1 Memberships/activities in professional and Honor societies**

- Member of the American Geophysical Union
  - Member of the Acoustical Society of America
- Active in the Technical Committees on Underwater Acoustics and Signal Processing,  
-Participated in organizing the 75<sup>th</sup> Anniversary meeting of Acoustical Society of America, -  
Chairing the session at the 75<sup>th</sup> Anniversary meeting of Acoustical Society of America,



-Participated in four Technical Program Organizing Meetings for Signal Processing, Underwater acoustics, and Animal Bioacoustics Technical Committees.

- Member of Sigma Pi Sigma National Physics Honor Society

## **VI.2 Reviewer**

- Journal of Acoustical Society of America
- Canadian Acoustics Journal
- Physics Essays
- AIP
- McGraw-Hill, Addison Wesley

## **VI.3 Special Sessions**

Organized and Chaired the special session “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

Organized and Chaired the special session "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

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

## **VI.4 Major honors, scholarships, fellowships and awards**

- Coca-Cola/BoR Endowed Professorship (2014-2017)
- December 2013 – Fellow of the Acoustical Society of America
- April 1997 -- Bill Good Award from Physics faculty of the University of New Orleans in recognition of outstanding research in Physics
- April 1996 -- Bill Good Award from Physics faculty of the University of New Orleans in recognition of outstanding research in Physics

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

## **VII OUTREACH**

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

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