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EDUCATION

Postdoctoral Fellow, Woods Hole Oceanographic Institution, 2008-2010.

Ph.D. in Applied Marine Physics, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, FL, 2007.

Master of Science in Physics, University of Louisiana in Lafayette, Lafayette, LA, 2003.

Bachelor of Science in Plasma Physics, Nizhniy Novgorod State University, Nizhniy Novgorod, Russia, 2001.

WORK EXPERIENCE

Research Associate III, Applied Ocean Physics and Engineering Department, Woods Hole Oceanographic Institution, 01/2011 – present.

Research Crew, *R/V Quickwater*, Uncovering the Lagrangian template of stirring on the Martha's Vineyard inner shelf. Deployment of Surface Drifters. Martha's Vineyard Coast, August, 2011.

Research Crew, *R/V Handshake*, Recovery of Surface Drifters. Martha's Vineyard Coast, August, 2011.

Postdoctoral Fellow, Applied Ocean Physics and Engineering Department, Woods Hole Oceanographic Institution, 2008-2010.

Graduate Research Assistant, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 2003-2007.

Guest Lecturer in the "Wave propagation in the ocean environment" graduate course, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 2007.

Graduate Research Assistant, University of Louisiana at Lafayette, 2002-2003.

Computer Science Teacher, Yeshiva High School, Nizhniy Novgorod, Russia, 2000-2001.

Private Physics and Mathematics Tutor for Undergraduate and High School Students, Nizhniy Novgorod, Russia, 1998-2001.

PEER-REVIEWED PUBLICATIONS

Udovydchenkov, I. A., R. A. Stephen, T. F. Duda, S. T. Bolmer, P. F. Worcester, M. A. Dzieciuch, J. A. Mercer, R. K. Andrew, and B. M. Howe, "Bottom interacting sound at 50 km range in a deep ocean environment", accepted to *J. Acoust. Soc. Am*., 2012.

Brown, M. G., and **I. A. Udovydchenkov**, "Underwater communication using weakly dispersive modal pulses", submitted to *Acoust. Phys.*, 2012.

Udovydchenkov, I. A., M. G. Brown, and T. F. Duda, "Piecewise coherent mode processing of acoustic data recorded by two horizontally separated vertical line arrays", *J. Acoust. Soc. Am.*, **131**, EL492-EL498, doi:10.1121/1.4722193, 2012.

Udovydchenkov, I. A., M. G. Brown, T. F. Duda, J. A. Mercer, R. K. Andrew, P. F. Worcester, M. A. Dzieciuch, B. M. Howe, and J. A. Colosi, "Modal analysis of the range evolution of broadband wavefields in the North Pacific Ocean: low mode numbers", *J. Acoust. Soc. Am.*, 131, 4409-4427, 2012.

Udovydchenkov, I. A., T. F. Duda, S. C. Doney, and I. D. Lima, "Modeling deep ocean shipping noise in varying acidity conditions", *J. Acoust. Soc. Am.*, **128**, EL185-EL191, doi: 10.1121/1.3402284, 2010.

Udovydchenkov, I. A., I. I. Rypina, and M. G. Brown "Mode filters and energy conservation", *J. Acoust. Soc. Am.*, **127**, EL185-EL191, doi:10.1121/1.3327240, 2010.

Udovydchenkov, I. A., and M. G. Brown, "Modal group time spreads in weakly range-dependent deep ocean environments", *J. Acoust. Soc. Am.* **123**, 41-50, 2008.

Beron-Vera, F. J., M. G. Brown, M. J. Olascoaga, I. I. Rypina, H. Kocak, and **I. A. Udovydchenkov**, "Zonal jets as transport barriers in planetary atmospheres", *J. Atmos. Sci.*, **65**, 3316-3326, 2008.

Rypina, I. I., M. G. Brown, F. J. Beron-Vera, H. Kocak, M. J. Olascoaga, and **I. A. Udovydchenkov**, "Robust transport barriers resulting from strong Kolmogorov-Arnold-Moser stability", *Phys. Rev. Lett.* 98, 104102, doi:10.1103/ PhysRevLett.98.104102, 2007.

Rypina, I. I., M. G. Brown, F. J. Beron-Vera, H. Kocak, M. J. Olascoaga, and **I. A. Udovydchenkov**, "On the Lagrangian dynamics of atmospheric zonal jets and the permeability of the stratospheric polar vortex, *J. Atmos. Sci.* **64**, 3595-3610, 2007

Rypina, I. I., **I. A. Udovydchenkov,** and M. G. Brown, "A transformation of the environment eliminates parabolic equation phase errors", *J. Acoust. Soc. Am.* **120**, 1295-1304 (2006).

Brown, M. G., F. J. Beron-Vera, I. Rypina, and **I. A. Udovydchenkov**, "Rays, modes, wavefield structure, and wavefield stability", *J. Acoust. Soc. Am.* **117**, 1607-1610, 2005.

TECHNICAL REPORTS

R. A. Stephen, S. T. Bolmer, **I. A. Udovydchenkov**, P. F. Worcester, M. A. Dzieciuch, L. J. Van Uffelen, J. A. Mercer, R. K. Andrew, L. J. Buck, J. A. Colosi, and B. M. Howe "NPAL04 OBS Data Analysis Part 1: Kinematics of Deep Seafloor Arrivals", Tech. Rept., WHOI-2008-03, December 2008.

CONFERENCE PROCEEDINGS

J. W. Caruthers, V. Kamenkovich, N. A. Sidorovskaia, **I. A. Udovydchenkov,** and G. E. Ioup, "Acoustic Pulse Propagation Studies in the Gulf of Mexico," *MARINE FRONTIERS* MTS/IEEE Proceedings of OCEANS'02, 1434-1437, 2002.

THESES AND DISSERTATION

Udovydchenkov, I. A., "Sound transmission through a fluctuating ocean: a modal approach", *Ph. D. Dissertation, University of Miami, Rosenstiel School of Marine and Atmospheric Science, Division of Applied Marine Physics*, Miami, FL, USA, 2007.

Udovydchenkov, I. A., "Acoustic modeling tools in studying the Gulf of Mexico environment", *A Thesis Presented to the Graduate Faculty of the University of Louisiana at Lafayette In Partial Fulfillment of the Requirements for the Degree Master of Science*, Lafayette, LA, USA, 2003.

Udovydchenkov, I. A., "Nonlinear scattering of electromagnetic wave, focused by axicon lens on a plasma cylinder", *Nizhniy Novgorod State University, Advanced School of General and Applied Physics, A Thesis Presented to the Faculty Committee of the Nizhniy Novgorod State University In Partial Fulfillment of the Requirements for the Degree Bachelor of Science in Plasma Physics*, Nizhniy Novgorod, Russia, 2001.

AWARDS AND HONORS

Recipient of the 2008-2010 Office of Naval Research Postdoctoral Fellowship at Woods Hole Oceanographic Institution.

Recipient of the 2007 Koczy Fellowship in recognition of outstanding doctoral level research at the Rosenstiel School of Marine and Atmospheric Science.

Honorable mention in recognition of an outstanding paper submitted for the Frank J. Millero prize, Rosenstiel School of Marine and Atmospheric Science, 2006.

ACADEMIC PRESENTATIONS

1. **I. A. Udovydchenkov**, R. A. Stephen, T. F. Duda, P. F. Worcester, M. A. Dzieciuch, J. A. Mercer, R. K. Andrew, and B. M. Howe, "Bottom reflections from rough topography in the Long-range Ocean Acoustic Propagation Experiment (LOAPEX)", *J. Acoust. Soc. Am.* **129**, 2863, 162nd Meeting of the Acoustical Society of America (2011).
2. **I. A. Udovydchenkov**, R. A. Stephen, T. F. Duda, P. F. Worcester, M. A. Dzieciuch, J. A. Mercer, R. K. Andrew, and B. M. Howe, "Bottom reflections from rough topography in the Long-range Ocean Acoustic Propagation Experiment (LOAPEX)", 14th NPAL Analysis Workshop (2011).
3. I. I. Rypina, **I. A. Udovydchenkov**, M. G. Brown, and B. D. Dushaw, "Sound propagation in strongly range-dependent deep ocean environments with application to the Philippine Sea", *J. Acoust. Soc. Am.* **128**, 2387, 160th Meeting of the Acoustical Society of America (2010).
4. I. I. Rypina, **I. A. Udovydchenkov**, M. G. Brown, and B. D. Dushaw, "Sound propagation in strongly range-dependent deep ocean environments with application to the Philippine Sea", 13th NPAL Analysis Workshop (2010).
5. **I. A. Udovydchenkov** and M. G. Brown, "On the scattering of low mode number energy", 13th NPAL Analysis Workshop (2010).
6. **I. A. Udovydchenkov**, "Propagation and scattering of broadband acoustic wavefields in deep ocean: a modal approach", NRL invited seminar (2010).
7. **I. A. Udovydchenkov**, M. G. Brown, and I. I. Rypina "Mode filters and energy conservation, **127**, 1819, 159th Meeting of the Acoustical Society of America (2010).
8. M. G. Brown, **I. A. Udovydchenkov,** and I. I. Rypina, "Ray methods in long-range deep ocean sound propagation", *J. Acoust. Soc. Am.* **126**, 2158, 158th Meeting of the Acoustical Society of America (2009).
9. **I. A. Udovydchenkov** and T. F. Duda, "Ocean noise level change in response to ocean acidification", *J. Acoust. Soc. Am.* **126**, 2211, 158th Meeting of the Acoustical Society of America (2009).
10. M. G. Brown, **I. A. Udovydchenkov,** and I. I. Rypina, "Some thoughts on sound propagation in strongly range-dependent environments", 12th NPAL Analysis Workshop (2009).
11. I. I. Rypina, **I. A. Udovydchenkov,** and M. G. Brown, "Resonant forward scattering of sound in the deep ocean by internal tides", 12th NPAL Analysis Workshop (2009).
12. **I. A. Udovydchenkov**, M. G. Brown, T. F. Duda, P. F. Worcester, M. A. Dzieciuch, J. A. Mercer, B. M. Howe, and R. K. Andrew, "Mode processing of LOAPEX measurements", 12th NPAL Analysis Workshop (2009).
13. M. G. Brown, F. J. Beron-Vera, **I. A. Udovydchenkov,** and I. I. Rypina "Coherence in long-range deep ocean propagation", *J. Acoust. Soc. Am.* **125**, 2491, 157th Meeting of the Acoustical Society of America (2009).
14. I. I. Rypina, **I. A. Udovydchenkov**, T. F. Duda, and M. G. Brown, "Resonant forward scattering of sound in the deep ocean by internal tides", *J. Acoust. Soc. Am.* **125**, 2501, 157th Meeting of the Acoustical Society of America (2009).
15. I. I. Rypina, L. J. Pratt, M. G. Brown, **I. A. Udovydchenkov**, and H. Kocak "Transport in an idealized three-gyre system with application to the Adriatic Sea", European Geosciences Union Meeting, Vol. 11, EGU2009-5685-1 (2009). Poster.
16. I. I. Rypina, L. J. Pratt, M. G. Brown, and **I. A. Udovydchenkov**, "Detecting Lagrangian coherent structures using isolated trajectory measure methods", European Geosciences Union Meeting, Vol. 11, EGU2009-1241-1 (2009).
17. I. I. Rypina, L. J. Pratt, M. G. Brown, **I. A. Udovydchenkov,** and H. Kocak, "Transport in an idealized three-gyre system with application to the surface flow in the Adriatic Sea", AGU 89(53), Fall Meet. Suppl., Abstract NG42A-02 (2008). Lorenz Lecture.
18. I. I. Rypina, **I. A. Udovydchenkov,** and M. G. Brown, "Resonant forward scattering of sound in deep ocean environments", *J. Acoust. Soc. Am.* **124**, 2598, 156th Meeting of the Acoustical Society of America (2008).

19. **I. A. Udovydchenkov**, M. G. Brown, and T. F. Duda, "Low mode-number scattering of transient signals in deep ocean", *J. Acoust. Soc. Am.* **124**, 2598, 156th Meeting of the Acoustical Society of America (2008).
20. F. J. Beron-Vera, M. G. Brown, M. J. Olascoaga, I. I. Rypina, H. Kocak, and **I. A. Udovydchenkov**, "Zonal jets as transport barriers in planetary atmospheres". Workshop on Nonlinear Processes in Oceanic and Atmospheric Flows (2008).
21. I. I. Rypina, L. J. Pratt, M. G. Brown, **I. A. Udovydchenkov,** and H. Kocak, "Transport and mixing in oceanic surface flows", Workshop on Nonlinear Processes in Oceanic and Atmospheric Flows (2008).
22. M. G. Brown, I. I. Rypina, **I. A. Udovydchenkov,** and F. J. Beron-Vera, "Wavefield structure and stability – old results and new perspectives", 11th NPAL Analysis Workshop (2008).
23. I. I. Rypina, **I. A. Udovydchenkov** and M. G. Brown, "Resonant forward scattering of sound in deep ocean environments", 11th NPAL Analysis Workshop (2008).
24. **I. A. Udovydchenkov**, M. G. Brown, P. F. Worcester, M. A. Dzieciuch, L. J. Van Uffelen, J. A. Mercer, B. M. Howe, and R. K. Andrew, "Mode processing of LOAPEX measurements – reducing environmental mismatch", 11th NPAL Analysis Workshop (2008).
25. F. J. Beron-Vera, M. G. Brown, M. J. Olascoaga, I. I. Rypina, H. Kocak, and **I. A. Udovydchenkov**, "Zonal jets as transport barriers in planetary atmospheres". AGU 88(52), Fall Meet. Suppl., Abstract P51A-0202 (2007).
26. I. I. Rypina, M. G. Brown, F. J. Beron-Vera, H. Kocak, and **I. A. Udovydchenkov**, "On the Lagrangian dynamics of atmospheric zonal jets and the permeability of the stratospheric polar vortex". AGU 88(52), Fall Meet. Suppl., Abstract A51F-11 (2007).
27. F. J. Beron-Vera, M. J. Olascoaga, I. I. Rypina, M. G. Brown, H. Kocak, and **I. A. Udovydchenkov**, "On the Lagrangian dynamics of atmospheric zonal jets and the permeability of the stratospheric polar vortex". AGU Chapman Conference on "The Role of the Stratosphere in Climate and Climate Change" (2007).
28. **I. A. Udovydchenkov** and M. G. Brown, "Anomalous scattering in the LOAPEX measurements?", 10th NPAL Analysis Workshop (2007).
29. **I. A. Udovydchenkov** and M. G. Brown, "Modal group time spreads in weakly range-dependent deep ocean environments. II: analysis of LOAPEX measurements", 10th NPAL Analysis Workshop (2007).
30. **I. A. Udovydchenkov** and M. G. Brown, "Modal group time spreads in weakly range-dependent deep ocean environments. I: theory", 10th NPAL Analysis Workshop (2007).
31. **I. A. Udovydchenkov** and M. G. Brown, "Modal group time spreads in weakly range-dependent deep ocean environments", *J. Acoust. Soc. Am.* **120**, 3062, 4th Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan (2006).
32. **I. A. Udovydchenkov**, M. G. Brown, P. F. Worcester, M. A. Dzieciuch, L. J. Van Uffelen, J. A. Mercer, B. M. Howe, and R. K. Andrew, "Mode processing of transient signals using a deficient vertical receiving array, with application to LOAPEX measurements", *J. Acoust. Soc. Am.* **120**, 3022, 4th Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan (2006).
33. **I. A. Udovydchenkov** and M. G. Brown, "Mode processing of LOAPEX data", 9th NPAL Analysis Workshop (2006).
34. **I. A. Udovydchenkov**, M. G. Brown, I. I. Rypina, and F. J. Beron-Vera "The waveguide invariant and modal group time spreads", 8th NPAL Analysis Workshop (2005).
35. I. Rypina, **I. A. Udovydchenkov**, M. G. Brown, and F. J. Beron-Vera, "A simple transformation of the environment eliminates standard PE phase errors", *J. Acoust. Soc. Am.* **116**, 2635, 148th Meeting of the Acoustical Society of America (2004).
36. **I. A. Udovydchenkov**, I. Rypina, M. G. Brown, and F. J. Beron-Vera, "A very simple transformation of the environment significantly reduces Thomson-Chapman PE phase errors", *J. Acoust. Soc. Am.* **116**, 2635, 148th Meeting of the Acoustical Society of America (2004).
37. F. J. Beron-Vera, M. G. Brown, I. Rypina, and **I. A. Udovydchenkov**, "Acoustic beam dynamics in deep ocean environment", *J. Acoust. Soc. Am.* **116**, 2609, 148th Meeting of the Acoustical Society of America (2004).

38. M. G. Brown, F. J. Beron-Vera, I. Rypina, and **I. A. Udovydchenkov**, "Alpha, beta and wavefield statistics", *J. Acoust. Soc. Am.* **116**, 2609, 148th Meeting of the Acoustical Society of America (2004). Invited.
39. H. DeFerrari, I. Rypina, and **I. A. Udovydchenkov**, "Identifying modes that produce late arrivals for low-frequency long-range propagation in shallow water", *J. Acoust. Soc. Am.* **116**, 2551, 148th Meeting of the Acoustical Society of America (2004).
40. M. G. Brown, F. J. Beron-Vera, I. Rypina, and **I. A. Udovydchenkov**, "Wavefield stability in weakly range-dependent sound channels", *J. Acoust. Soc. Am.* **115**, 2579, 147th Meeting of the Acoustical Society of America (2004).
41. M. G. Brown, F.J. Beron-Vera, **I. A. Udovydchenkov,** and I. Rypina, "30 years of progress?" 7th NPAL Analysis Workshop (2004).
42. N. A. Sidorovskaia, **I. A. Udovydchenkov**, I. Rypina, G. E. Ioup, J. W. Ioup, J. W. Caruthers, J. Newcomb, and R. Fisher, "Propagation modeling for sperm whale acoustic clicks in the northern Gulf of Mexico", *J. Acoust. Soc. Am.* **115**, 2556, 147th Meeting of the Acoustical Society of America (2004).
43. J. W. Caruthers, S. Vinogradov, N. Vinogradova, N. A. Sidorovskaia, G. E. Ioup, J. W. Ioup, and **I. A. Udovydchenkov**, "Gulf of Mexico oceanography and acoustic-pulse propagation across the DeSoto Canyon", *J. Acoust. Soc. Am.* **114**, 2376, 146th Meeting of the Acoustical Society of America (2003).
44. S. Vinogradov, J. W. Caruthers, G. H. Rayborn, **I. A. Udovydchenkov**, N. A. Sidorovskaia, I. Rypina, J. J. Newcomb, R. A. Fisher, G. E. Ioup, and J. W. Ioup, "Physical oceanography and acoustic propagation during LADC experiment in the Gulf of Mexico in 2001", *J. Acoust. Soc. Am.* **113**, 2332, 145th Meeting of the Acoustical Society of America (2003).