CV

NAME

Katsnelson, Boris

Born 2/04/1950

Dept of Physics, Voronezh State University, Russia
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POSITION TITLE
Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Voronezh State University, Russia	MS	11/72	Physics
Voronezh State University, Russia	PhD	11/76	Theoretical Physics

A. Personal Statement

My area of research is propagation of acoustic signals in shallow water (shelf zone of the ocean, lakes etc.). I have carried out both theoretical and experimental research in different areas of the sea (Barents Sea, Black Sea, and Atlantic Ocean) and Lake Kinneret. The main problem is propagation of the sound signals in such medium in the presence of spatial and temporal perturbations of different scales (variation of bathymetry, temperature fluctuations, hydrodynamic variability, sound scattering inhomogeneities, such as plankton clouds etc). In natural aquatic systems, these perturbations are unavoidable things.

I have three scientific monographs in this area published in Springer and Moscow publishing "Science", and about 80 journal papers. Currently I am PI of a few research grants (both Israel and International) dedicated to study of the sound propagation in shallow water aquatic systems. Team of University of Haifa has MS and PhD students working in this direction.

B. Positions and Honors

Positions and Employment

1977 – 1981 Senior Researcher at the Physics Dept. of Voronezh Forest Engineering Institute, Russia
1981 – 1988 Senior scientist at the Physics Dept. of Voronezh State University, Russia
1988 – 2008 Associate Professor, at the Physics Dept. ,Voronezh State University, Russia
2008 - Professor of the Physics Dept., Voronezh State University
2012 - Professor of Dept. of Marine Geosciences, University of Haifa, Israel
2013 - Visiting Professor of Institute of Acoustics, Chinese Academy of Sciences

Other Experience and Professional Memberships

Member and Fellow of American Acoustical Society
Member of Russian and European Acoustical Society,
Reviewer of the Journal of Acoustical Society of America and "Acoustical Physics" journal

C. Selected Publications

Scientific books

1. **Katsnelson B.G**., Petnikov V.G. Acoustics of the shallow sea, Moscow, Nauka, 1997, 191 pp (in Russian),
2. **Katsnelson B.G**., Petnikov V.G. Shallow water acoustics (enlarged and revised version) Praxis-Springer publishing, 2002, 267 pp
3. **Katsnelson B.G**., Petnikov V.G. Lynch J. Fundamentals of shallow water acoustics. Springer publishing, 2012 , 540 pp

Papers in refereed journals since 1995

1. Derevyagina E.I. and **Katsnelson B.G.** (1995) The Effect of random Inhomogeneities on the vertical directionality of surface noise in shallow water (in Russian) [Acoust. Phys., Vol.41(2), pp.205-209]
2. Andreev M.Yu., **Katsnel'son B.G**., Kulapin L.G. and Petnikov V.G. (1996) Influence of hydrodynamic variations in a shallow sea on sound field phase. Acoust. Phys., Vol.42(4), pp.402-406,
3. Grigorev V.A., **Katsnelson B.G**., Petnikov V.G. (1996) Frequency dependence of bottom attenuation coefficient in Barents sea. (in Russian) –Acusticheskiy zhurnal (Acoustical Physics), V.42(5), pp.712-714
4. **Katsnel'son B.G**., Pereselkov S.A. (1997) Depth dependence of of the sound intensity in shallow water with random inhomogeneities Acoust. Phys., Vol..43(1), pp.73-77
5. **Katsnel'son B.G**., Pereselkov S.A. (1997) Sound field intensity in a shallow-water waveguide in the presence of internal waves Acoust. Phys., Vol..43(5), pp.564-570,
6. **Katsnel'son B.G**., Pereselkov S.A. (1998) Resonance effects in sound scattering by internal wave packets in a shallow sea Acoust. Phys., Vol.44(6), pp. 684-689,
7. Grigoryev V.A., **Katsnelson B.G**., Kuzkin V.M., Petnikov V.G. (1999) Sound wave diffraction in waveguide. Physics of Vibration V.7, N.3, 185-190
8. **Katsnel'son B.G**., Pereselkov S.A. (2000) Low-frequency horizontal acoustic refraction caused by internal wave soliton in a shallow sea. Acoust. Phys., Vol.46(6), pp.684-691,
9. Grygoryev V.A., **Katsnelson B.G**., Kuz'kin V.M., Petnikov V.G. (2001) Characteristics of the diffraction of acoustic waves in stratified sound channelsAcoustical physics, Vol. 47(1), pp.35-41
10. Grygoryev V.A., **Katsnelson B.G**., Petnikov V.G. (2001) Determination of absorbing anf scattering properties of of ocean bottom using spectra of of broadband signals . Acoustical Physics, V.47(3) pp.330-335

11. **Katsnelson B. G.**, Pereselkov S. A., Petnikov V. G., Sabinin K. D and Serebryanyi A. N. (2001) Acoustic effects caused by high-intensity internal waves in a shelf zone. Acoustical Physics, V.47(4), pp. 424-429
12. Bel'kovich V.M., Grygoryev V.A., **Katsnelson B.G.**, Petnikov V.G. (2002) On the utilization of acoustic diffraction in monitoring ceteseans. Acoustical Physics, Vol. 48(2) pp. 133-136
13. Grygoryev V.A., **Katsnelson B.G.**, Pereselkov S.A., Petnikov V.G. (2003). Sound scattering by spatially localized inhomogeneities in a shallow-water waveguide in the presence of internal waves. Acoustical Physics, V.49(1) pp. 36-42
14. **Katsnelson B.G.**, Pereselkov S.A. (2004) Space-frequency dependence of the Horizontal structure of a sound field in the presence of intense internal waves Acoustical Physics, v.50, (2), p.169-176
15. **Katsnelson B.G.**, Pereselkov S.A., V.G.Petnikov (2004). On the feasibility of normal wave selection in a shallow water waveguide. Acoustical Physics, v.50(5), p.552-561
16. M.Badiey, **B.Katsnelson**, J.Lynch, S.Pereselkov, W.Siegmann. (2005) Measurement and modeling of three-dimensional sound intensity variations due to shallow water internal waves.J. Acoust. Soc. Am. **117** (2), p.613-625
17. Lynch J.F, Colosi J.A., **Katsnelson B.G**. et al (2006), "Inclusion of finescale oceanography and 3-D acoustics effects into ESME sound exposure model." // IEEE Journal of Oceanic Eng., V.31(3), pp.33-48
18. **Katsnel'son B. G.**, Badiey M., and Lynch J. (2007). Horizontal Refraction of Sound in a Shallow Sea and Its Experimental Observations. Acoustical Physics, V.53(3), pp. 313-325.
19. Badiey M., **Katsnelson B. G.**, Lynch J. F., Pereselkov S. A. Frequency dependence and intensity fluctuations due to shallow water internal waves. J. Acoust.Soc.Am, 2007, V.119, N8, P. 747-760
20. **Katsnel'son B. G.**, Lynch J. and Tshoidze A.V. (2007) Space-frequency distribution of sound field intensity in the vicinity of the temperature front in shallow water . Acoustical Physics, , v.53(5), p.611-617
21. **Katsnelson B.**, Grigorev V., Lynch J. (2008) Intensity fluctuations of mid-frequency sound signals, passing through moving nonlinear internal waves. JASA EL, vol.124, N3, EL78084
22. J.Luo, M.Badiey, E.Kriadi, **B.Katsnelson**, A.Tshoidze, J.Lynch, J.Moum Observation of sound focusing ad defocusing due to propagating nonlinear internal waves. JASA EL, 2008, v.124, N3, EL66-72
23. **Katsnel'son B. G.**, Tskhoidze A. V. (2008) Sound field phase front variations in shallow water in the presence of intense internal waves Acoustical Physics, v.54(6), p.835-843
24. Grigorev V.A., **Katsnelson B.G.** (2009) Intensity variations of high-frequency sound pulses due to the motion of shallow-water internal solitons. Acoustical Physics, 2009, v.55, N1, 68-75
25. **Katsnelson B.G.**, Grigorev V., Badiey M., Lynch J. F. (2009) Temporal sound field fluctuations in the presence of internal solitary waves in shallow water. // J. Acoust. Soc. Am., , V. 126, №.1, EL41-EL47
26. Song A,, Badiey M., Newhall A., Lynch J., DeFerrari H., **Katsnelson B.** (2010) Passive Time Reversal Acoustic Communications Through Shallow-Water Internal Waves // IEEE Journal of Ocean Eng., V. 35, №4 , P. 756-765
27. Badiey M., **Katsnelson B.**, Y-T Lin, Lynch J (2011) Acoustic multipath arrivals in the horizontal plane due to approaching nonlinear internal waves // J. Acoust. Soc. Am. V.129, №4, EL141-EL147
28. **Katsnel'son B. G.**, . Malykhin A. Yu and Tskhoidze A. V. (2011) Rearrangement of the horizontal space-time structure of the sound field in shallow water in the presence of moving internal waves Acoustical Physics, V 57, N 3, 368-374**,**
29. **Katsnel'son B. G.**, . Malykhin A. (2012) Yu Space–Time Sound Field Interference in the Horizontal Plane in a Coastal Slope Regionю Acoustical Physics, Vol. 58, No. 3, pp. 301–307
30. V. A. Grigor'ev**, B. G. Katsnel'son,** and J. F. Lynch (2013) Energy Fluctuations of High_Frequency Sound Signals in a Shallow Water in the Presence of Nonlinear Internal Waves. Acoustical Physics, Vol. 59, No. 4, pp. 431–438
31. **Katsnel'son B. G.**, . Malykhin A. Yu and Tskhoidze A. V. (2013) Propagation of wideband signals in shallow water in the presence of mesoscale horizontal stratification . Acoustics Australia, Vol. 41, No. 1, pp.75-83

32. Grigorev V. A., **Katsnelson B.G**. (2014) Sound fluctuations resulting from mode coupling in shallow-water internal waves. Acoustical Physics, Vol. 60, No.3, pp 287-296
33. Grigorev V., **Katsnelson B**., Lynch J., Sound intensity fluctuations resulting from mode coupling in shallow-water nonlinear internal waves r. Memoirs of the Faculty of Physics Lomonosov Moscow State Univ., 2014, N6, 146333
34. M.Badiey, **B.Katsnelson**, J.Lynch (2014) "Method for detection of plume of a first fluid within the second fluid", Published 2.of August 2014, PATENT US-2012-0195168-A1
35. Jixing Qin, **B.Katsnelson**, Peng Zhao-Hui, Zheng-Lin Li, Renhe Zhang, Wenyu Luo (2016) Three dimensional adiabatic mode parabolic equation method and its application. Acta Physics Sinica, v.65, N3, 034301-1-9 DOI 10.7498/aps 65.034301
36. Jixing Qin, **B.Katsnelson**, Zhenglin Li, Renhe Zhang, Wenyu Luo (2016) Intensity fluctuations due to motion of intenal solitons in shallow water. Acta Acustica, v.41 N2, p.145-15
37. V. A. Grigorev **B. G. Katsnelson** J. F. Lynch (2016) Bottom attenuation estimation using sound intensity fluctuations due to mode coupling by nonlinear internal waves in shallow water. JASA, v.140(11) pp.3980-3994
38. **B.Katsnelson**, A.Lunkov, I.Ostrovsky (2016), Interference pattern of the sound field in the presence of an internal Kelvin wave in a stratified lake, J. Acoust. Soc. Am.139, 881, http://dx.doi.org/10.1121/1.4941658
39. **B. Katsnelson**, A. Lunkov, I. Ostrovsky. (2016) Interference pattern of the sound field in the presence of an internal Kelvin wave in a stratified lake JASA, v.139(2), p.881-890
40. J-X. Qin, **B.Katsnelson**, O.Godin, Z-L. Li (2017) Geoacoustic inversion using time reversal of ocean noise. «Chinese Physics Letters», V.34, N9, 094301
41. **Katsnelson B**., Katsman R., Lunkov A., **Ostrovsky I**.(2017) Acoustical methodology for determination of gas content in aquatic sediments, with application to Lake Kinneret, Israel as a case study. Limnology and Oceanography. Methods. V.15, N6, pp.531-541
42. Godin O.A., **Katsnelson B. G**., Jixing Qin, Brown M. G., Zabotin N. A., and Xiaoqin Zang (2017). Application of time reversal to passive acoustic remote sensing of the ocean. Acoustical Physics, V.63, N3, pp.309-320
43. **Katsnelson B**., Grogorev V., Lynch J. (2018) Variability of phase and amplitude fronts due to horizontal refraction in shallow water. *Journal of the Acoustical Society of America*, v.143 (1) doi:, https://doi.org/10.1121/1.5020274

D. Research Support **Ongoing Research Support**

1. Project/Proposal Title: 3D effects in shallow water sound propagation and new methods of acoustical interferometry (PI), Source of Support: Israel Science Foundation (ISF), Total Award Period Covered: 01/10/2015-01/10/2019
2. Project/Proposal Title*:* Sound propagation and acoustic monitoring of nonlinear internal waves in areas of the shelf break and underwater canyons (PI), Israel Science Foundation (ISF), Total Award Period Covered: 10/10/2015 - 10/10/2018
3. Project/Proposal Title*:* Single-Element Passive Time Reversal Mirror in Shallow Water Acoustics (PI), Source of Support: Office of Naval Research Global (ONRG), Total Award Period Covered: 01/05/2016 - 01/05/2019
4. Project/Proposal Title: NSFOCE-BSF: Acoustic Noise Interferometry for Ocean Remote Sensing (PI) Source of Support: BSF, Total Award Period Covered: 03/10/2017 - 03/10/2020

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