

DENIS V. MAKAROV

Dr. Sci.

Leading Researcher

PERSONAL DETAILS

Name: Denis Vladimirovich Makarov

Date of Birth: 14th October 1977

Nationality: Russian

Marital: married

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CAREER

1994-1999 - student, Krasnoyarsk State University

2004 - Ph.D. in Physics (Acoustics)

2015 - Dr. Sci. in Physics (Theoretical Physics)

AWARDS

2005 - medal of Russian Academy of Sciences for young scientists.

2007 - V.I.Ill'ichev Prize of the Far-Eastern Branch of the Russian Academy of Sciences

2008 - L.M.Brekhovskikh medal of the Russian Acoustical Society

2016 - U.H. Kopvillem Prize of the Far-Eastern Branch of the Russian Academy of Sciences

MEMBERSHIP

Member of the Russian Acoustical Society.

RESEARCH GRANTS

2009-2010 - Russian Foundation of Basic Research, project "Modeling of sound propagation and modal acoustic tomography of Far-Eastern seas".

2009-2011 - Russian Foundation of Basic Research, project "Control of particle transport in space-periodic potentials".

2012-2013 - Russian Foundation of Basic Research, project "Study of sound propagation in oceanic acoustic waveguides with substantial influence of bottom".

2016-2018 - Russian Foundation of Basic Research, project "Study of sound propagation in oceanic waveguides by means of the random matrix theory".

2006-2007, 2009-2010 - projects supported by the grants of the Prezident of Russian Federation.

2009-2011 - grant of the "Dynasty" foundation.

2003-2011 - projects supported by the grants of the Prezidium of the Far-Eastern Branch of the Russian Academy of Sciences.

HOBBIES

football, chess, music, travelling

PUBLICATIONS

Monograph:

Makarov D.V., Prants S.V., Virovlyansky A.L., Zaslavsky G.M. *Ray and wave chaos in ocean acoustics: chaos in waveguides*. Singapore, World Scientific, 2010.

In journals:

41. Makarov D.V., Alliluev A.D. On experimental determination of the acoustic wavefield propagator. Underwater Investigations and Robotics. V. 35, No 1, P. 80-84 (2021). https://doi.org/10.37102/1992-4429_2021_35_01_08

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40. Makarov D.V., Komissarov A.A. Modelling of sound propagation in the ocean using the matrix propagator. Proceedings of Meetings on Acoustics. V. 42. 055004 (2020). <https://doi.org/10.1121/2.0001404>

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39. Makarov D.V., Elistratov A.A., Lozovik Yu.E. Non-Markovian effects in dynamics of exciton-polariton Bose condensates. Physics Letters A. V. 384. No 36. 126942 (2020). <https://doi.org/10.1016/j.physleta.2020.126942>

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38. Didov A.A., Kon'kov L.E., Makarov D.V. Transport through degenerate tori and quantum-to-classical crossover in a driven Aubry-Andre model. European Physical Journal B. V. 93. 13 (2020). <https://doi.org/10.1140/epjb/e2019-100502-6> , [weblink](#)

37. Makarov D.V. Random matrix theory for an adiabatically-varying oceanic acoustic waveguide. Wave Motion. V. 90. P. 205-217 (2019). <https://doi.org/10.1016/j.wavemoti.2019.05.007> , [weblink](#)

36. Makarov D. Algorithm of acoustic-field profile reconstruction using data of pointwise measurements. Underwater Investigations and Robotics. V. 26. No 2. P. 62-67 (2018) [in russian]. <https://doi.org/10.25808/24094609.2018.26.2.009> , [weblink](#)

35. Makarov D. Random matrix theory for low-frequency sound propagation in the ocean: a spectral statistics test. Journal of Theoretical and Computational Acoustics. V. 26. 1850002 (2018). <https://doi.org/10.1142/S2591728518500020> , [weblink](#)

34. Makarov D.V. On measurement of acoustic pulse arrival angles using a vertical array. Acoustical Physics. 2017. V. 63. P. 673-680 (2017). <https://doi.org/10.1134/S1063771017060100> , [weblink](#)

33. Petrov P.S., Ehrhardt M., Makarov D.V. Multiscale approach to parabolic equations derivation: beyond the linear theory. Procedia Computer Science. V. 108. P. 1823-1831 (2017). <https://doi.org/10.1016/j.procs.2017.05.085>

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32. Makarov D.V., L.E. Kon'kov. On the accuracy of measurements of sound pulse arrival angles with vertical antenna. Memoirs of the Faculty of Physics. No 5. 1750125 (2017) [weblink](#)

31. Makarov D.V. Modeling of acoustic wavefields by means of the random matrix theory. Memoirs of the Faculty of Physics. No 5. 1750124 (2017). [weblink](#)

30. Makarov D.V. Effect of atomic flux reversal in a fluctuating moving optical lattice. Quantum Electron., V. 47, No 5, P. 451-454 (2017). <https://doi.org/10.1070/QEL16349> , [weblink](#)

29. Makarov D.V., Uleysky M.Yu. Chaos-assisted formation of immiscible solitons and self-stabilization in the binary discrete nonlinear Schrödinger equation. Communications in Nonlinear Science and Numerical Simulation, V. 43, P. 227-238 (2017). <https://doi.org/10.1016/j.cnsns.2016.07.006>

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28. Petrov P.S., Makarov D.V., Ehrhardt M. Wide-angle parabolic approximations for the nonlinear Helmholtz equation in the Kerr media. Europhysics Letters, V. 116, 24004 (2016). <https://doi.org/10.1209/0295-5075/116/24004>

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27. Makarov D.V., Kon'kov L.E., Petrov P.S. Influence of oceanic synoptic eddies on the duration of modal acoustic pulses. Radiophys. Quantum Electron., V. 59, No 7, P. 576-591 (2016). <https://doi.org/10.1007/s11141-016-9724-4> , [weblink](#)

26. Makarov D.V., Kon'kov L.E. Angular structure of acoustic pulses in a horizontally-inhomogeneous underwater sound channel. Technical Acoustics (electronic journal), No 3 (2016) [in russian]. [weblink](#)

25. Argonov V.Yu., Makarov D.V. Zitterbewegung with spin-orbit coupled ultracold atoms in a fluctuating optical lattice. Journal of Physics B: Atomic, Molecular and Optical Physics, V.49, 175503 (2016). <https://doi.org/10.1088/0953-4075/49/17/175503> , [weblink](#)

24. Makarov D.V., Kon'kov L.E. Order-to-chaos transition in the model of a quantum pendulum subjected to noisy perturbation. Physica Scripta, V. 90, 035204 (2015). <https://doi.org/10.1088/0031-8949/90/3/035204>
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23. Makarov D.V., Kon'kov L.E. Quantum transport in a driven disordered potential: onset of directed current and noise-induced current reversal. European Physical Journal B, V. 87. 281 (2014). <https://doi.org/10.1140/epjb/e2014-50568-3> , [weblink](#)
22. Uleysky M.Yu., Makarov D.V. Dynamics of BEC mixtures loaded into the optical lattice in the presence of linear inter-component coupling. Journal of Russian Laser Research, V. 35. P. 138-150 (2014). <https://doi.org/10.1007/s10946-014-9409-4> , [weblink](#)
21. Makarov D.V., Kon'kov L.E. Quantum ratchet driven by broadband perturbation. Physics Letters A, V. 377. P. 3093-3097 (2013). <https://doi.org/10.1016/j.physleta.2013.09.035> , http://www.researchgate.net/publication/259128140_Quantum_ratchet_driven_by_broadband_perturbation
20. Maksimov D.N., Chesnokov I.Yu., Makarov D.V., Kolovsky A.R. Landau-Zener tunneling in 2D periodic structures in the presence of a gauge field: II. Electric breakdown. Journal of Physics B: Atomic, Molecular and Optical Physics, V. 46. 145302 (2013). <https://doi.org/10.1088/0953-4075/46/14/145302>
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19. Makarov D.V., Kon'kov L.E., Uleysky M.Yu., Petrov P.S. Wave chaos in a randomly inhomogeneous waveguide: spectral analysis of the finite-range evolution operator. Physical Review E, V. 87, 012911 (2013). <https://doi.org/10.1103/PhysRevE.87.012911> , [weblink](#)
18. Virovlyansky A.L., Makarov D.V., Prants S.V. Ray and wave chaos in underwater acoustic waveguides. Physics-USpekhi, V. 55, P. 18-46 (2012). <https://doi.org/10.3367/UFN.0182.201201b.0019> , [weblink](#)

17. Chacon R., Uleysky M.Yu., Makarov D.V. Universal chaotic layer width in space-periodic Hamiltonian systems under adiabatic ac time-periodic forces. Europhysics Letters, V. 90, 40003 (2010). <https://doi.org/10.1209/0295-5075/90/40003> , [weblink](#)

16. Makarov D.V., Sosedko E.V., Uleysky M.Yu. Frequency-modulated ratchet with autoresonance. European Physical Journal B, V. 73, P. 571-579 (2010). <https://doi.org/10.1140/epjb/e2010-00041-6>

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15. Uleysky M.Yu., Sosedko E.V., Makarov D.V. Autoresonant cooling of particles in spatially periodic potentials. Technical Physics Letters, V. 36, P. 1082-1084 (2010). <https://doi.org/10.1134/S1063785010120059>

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13. Makarov D.V., Uleysky M.Yu. Local chaos induced by spatial oscillations of a perturbation. Communications in Nonlinear Science and Numerical Simulation, V. 13, P. 400-406 (2008). <https://doi.org/10.1016/j.cnsns.2006.04.007>

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12. Makarov D.V., Kon'kov L.E., Uleysky M.Yu. The ray-wave correspondence and the suppression of chaos in long-range sound propagation in the ocean. Acoustical Physics, V. 54, P.382-391 (2008). <https://doi.org/10.1134/S1063771008030147> , [weblink](#)

11. Makarov D.V. Activation of a ballistic current of particles with the usage of a weak wavelike

perturbation with slowly varying orientation. Technical Physics Letters, V.34, P.303-305 (2008). <https://doi.org/10.1134/S106378500804010X>

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10. Kon'kov L.E., Makarov D.V., Sosedko E.V., Uleysky M.Yu. Recovery of ordered periodic orbits with increasing wavelength for sound propagation in a range-dependent waveguide. Physical Review E, V. 76, 056212 (2007). <https://doi.org/10.1103/PhysRevE.76.056212> , [weblink](#)

9. Makarov D.V., Kon'kov L.E. Chaotic diffusion at sound propagation in a range-dependent underwater sound channel. Russian Journal of Nonlinear Dynamics (Nelineynaya Dinamika), V. 3, No.2, P. 157-174 (2007) [in russian]. <http://nd.ics.org.ru/doc/r/pdf/1079/1>

8. Makarov D.V., Uleysky M.Yu. Ray escape from a range-dependent underwater sound channel. Acoustical Physics. V.53. P.495-502 (2007). <https://doi.org/10.1134/S1063771007040100> , [weblink](#)

7. Makarov D.V., Uleysky M.Yu. Giant acceleration in slow-fast space-periodic Hamiltonian systems. Physical Review E, V. 75, 065201(R) (2007). <https://doi.org/10.1103/PhysRevE.75.065201> , [weblink](#)

6. Makarov D.V., Uleysky M.Yu. Generation of the ballistic particle transport in a periodic Hamiltonian system subjected to small time-dependent perturbation. JETP Letters, V.83, P.522-525 (2006) [doi: 10.1134/S0021364006110117](https://doi.org/10.1134/S0021364006110117) , [weblink](#)

5. Makarov D.V., Uleysky M.Yu., Budyansky M.V., Prants S.V. Clustering in randomly driven Hamiltonian systems. Physical Review E, V. 73, 066210 (2006), <https://doi.org/10.1103/PhysRevE.73.066210> , [weblink](#)

4. Makarov D.V., Uleysky M.Yu. Specific Poincare' map for a randomly-perturbed nonlinear oscillator. Journal of Physics A: Mathematical and General, V. 39. P. 489-497 (2006), <https://doi.org/10.1088/0305-4470/39/3/017>

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3. Makarov D.V., Uleysky M.Yu. Ray chaos and ray clustering in an ocean waveguide. Chaos, V. 14, P. 79-95 (2004), <https://doi.org/10.1063/1.1626392> , [weblink](#)

2. Makarov D.V., Uleysky M.Yu., Prants S.V. On the possibility of determining internal wave characteristics from the arrival time distribution. Technical Physics Letters, V. 29, № 5, P. 430-432 (2003). <https://doi.org/10.1134/1.1579816>

1. Makarov D.V., Prants S.V., Uleysky M.Yu. Structure of spatial nonlinear resonance of rays in an inhomogeneous underwater sound channel. Doklady Earth Sciences, V. 106, P. 106-108 (2002).

Dissertations:

PhD thesis "Nonlinear dynamics of rays in a inhomogeneous underwater sound channel" (Vladivostok, POI FEB RAS, 2004).

Dr.Sci. thesis "Manifestations of Hamiltonian chaos in classical and wave dynamics" (Vladivostok, Far-Eastern Federal University, 2014).