

Curriculum Vitae

Ilya Dodin

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EDUCATION

PhD (2005), MA (2001) <i>in plasma physics</i>	Princeton University Department of Astrophysical Sciences
BS (1998), MS (2000) <i>in physics</i>	Nizhniy Novgorod State University Nizhniy Novgorod, Russia

RESEARCH APPOINTMENTS

since 01/2020	Principal Research Physicist Princeton Plasma Physics Laboratory
10/2015-12/2019	Research Physicist Princeton Plasma Physics Laboratory
11/2011-09/2015	Staff Research Physicist Princeton Plasma Physics Laboratory
11/2007-10/2011	Associate Research Scholar Princeton University
07/2005-11/2007	Postdoctoral Research Associate Princeton University

TEACHING APPOINTMENTS

since 02/2020	Lecturer with the Rank of Professor Department of Astrophysical Sciences, Princeton University
09/2009-02/2020	Lecturer Department of Astrophysical Sciences, Princeton University

VISITING APPOINTMENTS

06/2017-07/2017	Visiting Associate Professor National Institute for Fusion Science, Japan
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RESEARCH INTERESTS

Basic plasma theory, wave theory and geometrical optics, radiofrequency waves, laser–plasma interactions, turbulence, ponderomotive effects, quantum–classical analogies, Hamiltonian mechanics.

AWARDS AND FELLOWSHIPS

- **Thomas H. Stix Award** for Outstanding Early Career Contributions to Plasma Physics Research, American Physical Society, 2014.
- **Young Scientist Prize** in Plasma Physics, International Union of Pure and Applied Physics, 2011.
- **Harold W. Dodds Fellowship**, Princeton University, academic year 2003-2004.
- **First Prize**, 7th Nizhniy Novgorod Session of Young Scientists, Nizhniy Novgorod, Russia, 2002.
- **First Year Merit Prize**, Princeton University, 1999.
- **Russian Government Fellowship**, Nizhniy Novgorod State University, academic year 1998-1999.
- **Soros Student Fellowship**, Open Society Institute Soros Fund, academic year 1994-1995.

SYNERGISTIC ACTIVITIES

- **Committee Member**, Selection Committee for the 2023 APS DPP John Dawson Award for Excellence in Plasma Physics Research.
- **Co-organizer**, Mini-conference on Plasma and Quantum Information Sciences, 65th Annual Meeting of the APS Division of Plasma Physics (2023).
- **Co-organizer**, workshop *Working Across Scales in Complex Systems* (Atlanta, 2023, livingtheory.emory.edu/news-events/plasma_bio_workshop.html).
- **Editorial Board Member**, Physical Review E (2019-current).
- **Associate Editor**, Journal of Plasma Physics (2016-2017).
- **Chair of the Organizing Committee**, symposium *Solved and Unsolved Problems in Plasma Physics* (Princeton, 2016, fisch-fest2016.pppl.gov).
- **Session Chair**, APS DPP Annual Meetings (2019, 2016, 2008).
- **Committee Member**, Selection Committee for the 2015 APS Thomas H. Stix Award.
- **Lecturer**, National Undergraduate Fellowship Program (2011-2014).
- **Reviewer**, multiple journals and U.S. federal funding agencies.

PH.D. STUDENTS

- **Suying Jin**, *Structure formation in magnetohydrodynamic turbulence* (ongoing).

- **Deepen Garg**, *Dispersive gravitational waves in gases and plasmas*, Ph.D. thesis (Princeton University, 2023).
- **Nicolas A. Lopez**, *Metaplectic geometrical optics*, Ph.D. thesis (Princeton University, 2022), arXiv: 2210.03188.
- **Hongxuan Zhu**, *Phase-space theory of drift wave–zonal flow interactions and the Dimits shift*, Ph.D. thesis (Princeton University, 2020).
- **Daniel E. Ruiz**, *A geometric theory of waves and its applications to plasma physics*, Ph.D. thesis (Princeton University, 2017), arXiv:1708.05423.

INVITED TALKS, EXTERNAL SEMINARS, AND COLLOQUIA

1. *Quasilinear theory, collisions, and ponderomotive forces: a unification for general plasmas and beyond*, Plenary Talk, PL-27, 6th Asia Pacific Conference on Plasma Physics (AAPPS-DPP-2022), Oct 9-14, 2022.
2. *Waves in plasmas: is ray optics really limited to short wavelengths?*, Seminar (online), A*STAR, Singapore, Sep 20, 2022.
3. *Quasilinear theory: incorporating plasma inhomogeneity and collisions from first principles*, Invited Talk, 13th Plasma Kinetics Working Meeting, Vienna, Austria, Jul 25–Aug 5, 2022.
4. *Modern wave theory with applications to radiofrequency waves in plasma*, Review Talk (plenary), YR01.001, 63rd Annual Meeting of the APS Division of Plasma Physics, Pittsburgh, PA, Nov 8–12, 2021.
5. *Applications of modern geometrical optics to modeling radiofrequency waves and plasma turbulence*, Journal of Plasma Physics Frontiers of Plasma Physics Colloquium (online), Oct 28, 2021.
6. *Does quantum computing look promising for plasma simulations?*, Seminar (online), Instituto Superior Técnico, Lisbon, Portugal, Dec 18, 2020.
7. *Plasma physics of waves and turbulence*, Seminar (online), UC Berkeley, Oct 16, 2020.
8. *Theory of mode-converting quasioptical wave beams in inhomogeneous plasma*, Invited Talk, US–Japan Workshop on RF Heating Physics, Princeton, NJ, Sep 4–6, 2019.
9. *Cross-scale interactions and the Dimits shift in reduced models of drift-wave turbulence*, Invited Talk, 12th Plasma Kinetics Working Meeting, Vienna, Austria, Jul 29 – Aug 9, 2019.
10. *Modeling drift-wave turbulence as quantumlike plasma*, Invited Talk, 46th EPS Conference on Plasma Physics, Milan, Italy, Jul 8–12, 2019.
11. *Understanding the dynamics of zonal flows through quantumlike modeling of drift-wave turbulence*, Plasma Physics Seminar, University of Maryland, Jun 12, 2019.
12. *Structure from turbulence*, Theoretical Physics Colloquium, University of Oxford, Oxford, UK, May 3, 2019.
13. *Quantumlike modeling of drift-wave turbulence: recent updates*, Plasma Theory Group Seminar, University of Oxford, Oxford, UK, May 2, 2019.

14. *Mode-converting wave beams can be simulated without full-wave codes*, Invited Talk, Sherwood Fusion Theory Conference, Princeton, NJ, Apr 15–17, 2019.
15. *Structure from turbulence, or why you might want to care about plasma physics even if you are not a plasma physicist*, Invited Seminar, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam, Germany, Mar 28, 2019.
16. *Inhomogeneous drift-wave turbulence as an effective quantum plasma*, Invited Talk, 11th Plasma Kinetics Working Meeting, Vienna, Austria, Jul 23 – Aug 3, 2018.
17. *Inhomogeneous wave turbulence as an effective quantum plasma: a study of zonal flows*, Invited Talk, SIAM Conference on Nonlinear Waves and Coherent Structures, Orange, CA, Jun 11–14, 2018.
18. *Does a photon have a linear polarizability and why does it matter?*, Magneto-Fluid Dynamics Seminar, CIMS, NYU, Oct 10, 2017.
19. *Quantumlike physics in classical plasmas*, Physics Colloquium, University of Massachusetts Boston, Sep 24, 2015.
20. *Modernizing and advancing the understanding of plasma waves: field-theoretical paradigm*, Online Town Hall Meeting on Theory and Computation, Frontiers of Plasma Science Workshop series, Aug 5, 2015.
21. *The ponderomotive effect beyond the ponderomotive force*, Invited Talk, 56th Annual Meeting of the APS Division of Plasma Physics, New Orleans, LA, Oct 27–31, 2014.
22. *Nonlinear plasma waves with trapped particles: variational theory and simulations*, Invited Talk, 5th International Conference “Frontiers of Nonlinear Physics”, Nizhny Novgorod, Russia, Jul 28 – Aug 2, 2013.
23. *Lagrangian and geometrical methods in the fundamental physics of waves and their application to plasma dynamics*, Invited Talk, 6th ITER International School on RF Heating and Current Drive in Plasmas, Ahmedabad, India, Dec 2–6, 2012.
24. *Quantum physics of classical waves in plasma*, Invited Talk, 54th Annual Meeting of the APS Division of Plasma Physics, Providence, RI, Oct 29 – Nov 2, 2012.
25. *Axiomatic approach to wave-particle interactions and its applications to waves with trapped particles*, Invited Talk, Sherwood Fusion Theory Conference (held in conjunction with the APS April Meeting), Atlanta, GA, Mar 30 – Apr 3, 2012.
26. *Ponderomotive forces and wave dispersion: two sides of the same coin*, Invited Talk, 30th International Conference on the Phenomena in Ionized Gases, Belfast, UK, Aug 28 – Sep 2, 2011.
27. *Nonlinear dispersion and conservation theorems for adiabatic waves in collisionless plasmas*, Invited Talk, 3rd International Conference on High Energy Density Physics, Lisbon, Portugal, May 17–20, 2011.
28. *Compressing linear waves trapped in plasma*, Invited Talk, 40th Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT, Jan 3–7, 2010.
29. *Non-Newtonian mechanics and manipulation of oscillation centers*, Invited Talk, International Workshop on the Frontiers of Modern Plasma Physics, ICTP, Trieste, Italy, Jul 14–25, 2008.
30. *Classical analogues of atom manipulation techniques using laser radiation*, Invited Talk, International Workshop on Quantum Reflection, ITAMP, Harvard University, Cambridge, MA, Oct 21–24, 2007.

31. *Particle manipulation with nonadiabatic ponderomotive forces*, Invited Talk, 15th International Conference on Atomic Processes in Plasmas, Gaithersburg, MD, Mar 19–22, 2007.
32. *Manipulating the particle phase space with nonadiabatic ponderomotive barriers*, Invited Talk, 47th Annual Meeting of the APS Division of Plasma Physics, Philadelphia, PA, Oct 30 – Nov 3, 2006.
33. *Precise manipulations of the particle phase space with nonadiabatic ponderomotive barriers*, Invited Talk, Attosecond Science Workshop, Santa Barbara, CA, Jul 31 – Sep 15, 2006.
34. *Nonadiabatic ponderomotive barriers*, Invited Talk, International Conference on Plasma Science ICOPS 2006, Traverse City, MI, Jun 4–8, 2006.
35. *Nonadiabatic ponderomotive barriers*, Invited Talk, Sherwood Fusion Theory Conference (held in conjunction with the APS April Meeting), Dallas, TX, Apr 22–25, 2006.

PUBLICATIONS

1. I. Novikau, I. Y. Dodin, and E. A. Startsev, *Encoding of linear kinetic plasma problems in quantum circuits via data compression*, arXiv:2403.11989.
2. S. Jin and I. Y. Dodin, *On reduced modeling of the modulational dynamics in magnetohydrodynamics*, arXiv:2402.12680.
3. D. Garg and I. Y. Dodin, *Self-consistent interaction of linear gravitational and electromagnetic waves in non-magnetized plasma*, J. Cosmol. Astropart. Phys. **2024**, 045 (2024), <https://doi.org/10.1088/1475-7516/2024/02/045>.
4. D. Garg and I. Y. Dodin, *Gauge-invariant gravitational waves in matter beyond linearized gravity*, Classical and Quantum Gravity **40**, 215002 (2023), <https://doi.org/10.1088/1361-6382/acfc0e>.
5. Y. Fu, I. Y. Dodin, and H. Qin, *Spin Hall effect of radiofrequency waves in magnetized plasmas*, Phys. Rev. E **107**, 055210 (2023), <https://doi.org/10.1103/PhysRevE.107.055210>.
6. I. Novikau, I. Y. Dodin, and E. A. Startsev, *Simulation of linear non-Hermitian boundary-value problems with quantum singular-value transformation*, Phys. Rev. Appl. **19**, 054012 (2023), <https://doi.org/10.1103/physrevapplied.19.054012>.
7. D. Garg and I. Y. Dodin, *Gauge invariants of linearized gravity with a general background metric*, Class. Quantum Gravity **39**, 245003 (2022), <https://doi.org/10.1088/1361-6382/aca067>.
8. D. Garg and I. Y. Dodin, *Gravitational wave modes in matter*, J. Cosmol. Astropart. Phys. **2022**, 017 (2022), <https://doi.org/10.1088/1475-7516/2022/08/017>.
9. I. Y. Dodin, *Quasilinear theory for inhomogeneous plasma*, J. Plasma Phys. **88**, 905880407 (2022), <https://doi.org/10.1017/S0022377822000502>.
10. I. Novikau, E. A. Startsev, and I. Y. Dodin, *Quantum signal processing for simulating cold plasma waves*, Phys. Rev. A **105**, 062444 (2022), <https://doi.org/10.1103/physreva.105.062444>.
11. N. A. Lopez and I. Y. Dodin, *Metaplectic geometrical optics for ray-based modeling of caustics: theory and algorithms*, Phys. Plasmas **29**, 052111 (2022), <https://doi.org/10.1063/5.0082241>.
12. K. Yanagihara, I. Y. Dodin, and S. Kubo, *Quasioptical modeling of wave beams with and without mode conversion. IV. Numerical simulations of waves in dissipative media*, Phys. Plasmas **28**, 122102 (2021), <https://doi.org/10.1063/5.0057345>.

13. K. Yanagihara, S. Kubo, I. Y. Dodin, and the LHD Experiment Group, *Quasioptical propagation and absorption of electron cyclotron waves: simulations and experiment*, Nucl. Fusion **61**, 106012 (2021), <https://doi.org/10.1088/1741-4326/ac1d86>.
14. I. Y. Dodin and E. A. Startsev, *On applications of quantum computing to plasma simulations*, Phys. Plasmas **28**, 092101 (2021), <https://doi.org/10.1063/5.0056974>.
15. S. M. Donnelly, N. A. Lopez, and I. Y. Dodin, *Steepest-descent algorithm for simulating plasma-wave caustics via metaplectic geometrical optics*, Phys. Rev. E **104**, 025304 (2021), <https://doi.org/10.1103/physreve.104.025304>.
16. N. A. Lopez and I. Y. Dodin, *Exactly unitary discrete representations of the metaplectic transform for linear-time algorithms*, J. Opt. Soc. Am. A **38**, 634 (2021), <https://doi.org/10.1364/josaa.417412>.
17. H. Zhu and I. Y. Dodin, *Wave-kinetic approach to zonal-flow dynamics: recent advances*, Phys. Plasmas **28**, 032303 (2021), <https://doi.org/10.1063/5.0043784>.
18. N. A. Lopez and I. Y. Dodin, *Metaplectic geometrical optics for modeling caustics in uniform and nonuniform media*, J. Opt. **23**, 025601 (2021), <https://doi.org/10.1088/2040-8986/abd1ce>.
19. D. Garg and I. Y. Dodin, *Average nonlinear dynamics of particles in gravitational pulses: effective Hamiltonian, secular acceleration, and gravitational susceptibility*, Phys. Rev. D **102**, 064012 (2020), <https://doi.org/10.1103/physrevd.102.064012>.
20. N. A. Lopez and I. Y. Dodin, *Restoring geometrical optics near caustics using sequenced metaplectic transforms*, New J. Phys. **22**, 083078 (2020), <https://doi.org/10.1088/1367-2630/aba91a>.
21. H. Zhu, Y. Zhou, and I. Y. Dodin, *Theory of the tertiary instability and the Dimits shift within a scalar model*, J. Plasma Phys. **86**, 905860405 (2020), <https://doi.org/10.1017/S0022377820000823>.
22. M. A. Oancea, J. Joudioux, I. Y. Dodin, D. E. Ruiz, C. F. Paganini, and L. Andersson, *Gravitational spin Hall effect of light*, Phys. Rev. D **102**, 024075 (2020), <https://doi.org/10.1103/PhysRevD.102.024075>.
23. V. Tsiolis, Y. Zhou, and I. Y. Dodin, *Structure formation in turbulence as an instability of effective quantum plasma*, Phys. Lett. A **384**, 126377 (2020), <https://doi.org/10.1016/j.physleta.2020.126377>.
24. Y. Zhou, H. Zhu, and I. Y. Dodin, *Solitary zonal structures in subcritical drift waves: a minimum model*, Plasma Phys. Control. Fusion **62**, 045021 (2020), <https://doi.org/10.1088/1361-6587/ab78f3>.
25. H. Zhu, Y. Zhou, and I. Y. Dodin, *Theory of the tertiary instability and the Dimits shift from reduced drift-wave models*, Phys. Rev. Lett. **124**, 055002 (2020), <https://doi.org/10.1103/PhysRevLett.124.055002>.
26. N. A. Lopez and I. Y. Dodin, *Pseudo-differential representation of the metaplectic transform and its application to fast algorithms*, J. Opt. Soc. Am. A **36**, 1846 (2019), <https://doi.org/10.1364/JOSAA.36.001846>.
27. K. Yanagihara, I. Y. Dodin, and S. Kubo, *Quasioptical modeling of wave beams with and without mode conversion. III. Numerical simulations of mode-converting beams*, Phys. Plasmas **26**, 072112 (2019), <https://doi.org/10.1063/1.5095174>.
28. K. Yanagihara, I. Y. Dodin, and S. Kubo, *Quasioptical modeling of wave beams with and without mode conversion. II. Numerical simulations of single-mode beams*, Phys. Plasmas **26**, 072111 (2019), <https://doi.org/10.1063/1.5095173>.

29. I. Y. Dodin, D. E. Ruiz, K. Yanagihara, Y. Zhou, and S. Kubo, *Quasioptical modeling of wave beams with and without mode conversion. I. Basic theory*, Phys. Plasmas **26**, 072110 (2019), <https://doi.org/10.1063/1.5095076>.
30. K. Yanagihara, S. Kubo, T. I. Tsujimura, and I. Y. Dodin, *Mode purity of electron cyclotron waves after their passage through the peripheral plasma in the Large Helical Device*, Plasma and Fusion Research **14**, 3403103 (2019), <https://doi.org/10.1585/pfr.14.3403103>.
31. H. Zhu, Y. Zhou, and I. Y. Dodin, *Nonlinear saturation and oscillations of collisionless zonal flows*, New J. Phys. **21**, 063009 (2019), <https://doi.org/10.1088/1367-2630/ab2251>.
32. Y. Zhou, H. Zhu, and I. Y. Dodin, *Formation of solitary zonal structures via the modulational instability of drift waves*, Plasma Phys. Controlled Fusion **61**, 075003 (2019), <https://doi.org/10.1088/1361-6587/ab16a8>.
33. D. E. Ruiz, M. E. Glinsky, and I. Y. Dodin, *Wave kinetic equation for inhomogeneous drift-wave turbulence beyond the quasilinear approximation*, J. Plasma Phys. **85**, 905850101 (2019), <https://doi.org/10.1017/S0022377818001307>.
34. H. Zhu, Y. Zhou, and I. Y. Dodin, *On the Rayleigh–Kuo criterion for the tertiary instability of zonal flows*, Phys. Plasmas **25**, 082121 (2018), <https://doi.org/10.1063/1.5038859>.
35. H. Zhu, Y. Zhou, and I. Y. Dodin, *On the structure of the drifton phase space and its relation to the Rayleigh–Kuo criterion of the zonal-flow stability*, Phys. Plasmas **25**, 072121 (2018), <https://doi.org/10.1063/1.5039652>.
36. H. Zhu, Y. Zhou, D. E. Ruiz, and I. Y. Dodin, *Wave kinetics of drift-wave turbulence and zonal flows beyond the ray approximation*, Phys. Rev. E **97**, 053210 (2018), <https://doi.org/10.1103/PhysRevE.97.053210>.
37. I. Y. Dodin, D. E. Ruiz, and S. Kubo, *Mode conversion in cold low-density plasma with a sheared magnetic field*, Phys. Plasmas **24**, 122116 (2017), <https://doi.org/10.1063/1.5003931>.
38. A. V. Arefiev, I. Y. Dodin, A. Kohn, E. J. Du Toit, E. Holzhauer, V. F. Shevchenko, and R. G. L. Vann, *Kinetic simulations of X–B and O–X–B mode conversion and its deterioration at high input power*, Nucl. Fusion **57**, 116024 (2017), <https://doi.org/10.1088/1741-4326/aa7e43>.
39. K. Hara, I. Barth, E. Kaminski, I. Y. Dodin, and N. J. Fisch, *Kinetic simulations of ladder climbing by electron plasma waves*, Phys. Rev. E **95**, 053212 (2017), <https://doi.org/10.1103/PhysRevE.95.053212>.
40. I. Y. Dodin and A. V. Arefiev, *Parametric decay of plasma waves near the upper-hybrid resonance*, Phys. Plasmas **24**, 032119 (2017), <https://doi.org/10.1063/1.4979168>.
41. I. Y. Dodin, A. I. Zhmoginov, and D. E. Ruiz, *Variational principles for dissipative (sub)systems, with applications to the theory of linear dispersion and geometrical optics*, Phys. Lett. A **381**, 1411 (2017), <https://doi.org/10.1016/j.physleta.2017.02.023>.
42. D. E. Ruiz and I. Y. Dodin, *Extending geometrical optics: a Lagrangian theory for vector waves*, Phys. Plasmas **24**, 055704 (2017), <https://doi.org/10.1063/1.4977537>.
43. D. E. Ruiz and I. Y. Dodin, *Ponderomotive dynamics of waves in quasiperiodically modulated media*, Phys. Rev. A **95**, 032114 (2017), <https://doi.org/10.1103/PhysRevA.95.032114>.
44. I. Y. Dodin and D. E. Ruiz, *Photon polarizability and its effect on the dispersion of plasma waves*, J. Plasma Phys. **83**, 905830201 (2017), <https://doi.org/10.1017/S0022377817000198>.

45. D. E. Ruiz, J. B. Parker, E. L. Shi, and I. Y. Dodin, *Zonal-flow dynamics from a phase-space perspective*, Phys. Plasmas **23**, 122304 (2016), <https://doi.org/10.1063/1.4971813>.
46. A. A. Balakin, I. Y. Dodin, G. M. Fraiman, and N. J. Fisch, *Backward Raman amplification of broadband pulses*, Phys. Plasmas **23**, 083115 (2016), <https://doi.org/10.1063/1.4960835>.
47. D. E. Ruiz, C. L. Ellison, and I. Y. Dodin, *Relativistic ponderomotive Hamiltonian of a Dirac particle in a vacuum laser field*, Phys. Rev. A **92**, 062124 (2015), <https://doi.org/10.1103/PhysRevA.92.062124>.
48. D. E. Ruiz and I. Y. Dodin, *First-principles variational formulation of polarization effects in geometrical optics*, Phys. Rev. A **92**, 043805 (2015), <https://doi.org/10.1103/PhysRevA.92.043805>.
49. D. E. Ruiz and I. Y. Dodin, *On the correspondence between quantum and classical variational principles*, Phys. Lett. A **379**, 2623 (2015), <https://doi.org/10.1016/j.physleta.2015.06.014>.
50. C. Liu and I. Y. Dodin, *Nonlinear frequency shift of electrostatic waves in general collisionless plasma: unifying theory of fluid and kinetic nonlinearities*, Phys. Plasmas **22**, 082117 (2015), <https://doi.org/10.1063/1.4928585>.
51. D. E. Ruiz and I. Y. Dodin, *Lagrangian geometrical optics of nonadiabatic vector waves and spin particles*, Phys. Lett. A **379**, 2337 (2015), <https://doi.org/10.1016/j.physleta.2015.07.038>.
52. I. Barth, I. Y. Dodin, and N. J. Fisch, *Ladder climbing and autoresonant acceleration of plasma waves*, Phys. Rev. Lett. **115**, 075001 (2015), <https://doi.org/10.1103/PhysRevLett.115.075001>.
53. A. A. Balakin, G. M. Fraiman, and I. Y. Dodin, *Two-stage Raman compression of laser pulses with controllable phase fronts*, Phys. Plasmas **22**, 053112 (2015), <https://doi.org/10.1063/1.4921654>.
54. I. Y. Dodin, *Comment on "Formation of phase space holes and clumps"*, Phys. Rev. Lett. **113**, 179501 (2014), <https://doi.org/10.1103/PhysRevLett.113.179501>.
55. I. Y. Dodin and N. J. Fisch, *Are perytons signatures of ball lightning?*, Ap. J. **794**, 98 (2014), <https://doi.org/10.1088/0004-637X/794/2/98>.
56. I. Y. Dodin and N. J. Fisch, *Ponderomotive forces on waves in modulated media*, Phys. Rev. Lett. **112**, 205002 (2014), <https://doi.org/10.1103/PhysRevLett.112.205002>.
57. I. Y. Dodin, *Geometric view on noneikonal waves*, Phys. Lett. A **378**, 1598 (2014), <https://doi.org/10.1016/j.physleta.2014.04.004>.
58. I. Y. Dodin and N. J. Fisch, *On the nature of kinetic electrostatic electron nonlinear (KEEN) waves*, Phys. Plasmas **21**, 034501 (2014), <https://doi.org/10.1063/1.4868230>.
59. I. Y. Dodin, *On variational methods in the physics of plasma waves*, Fusion Sci. Tech. **65**, 54 (2014), <https://doi.org/10.13182/FST13-641>.
60. X. Guan, I. Y. Dodin, H. Qin, J. Liu, and N. J. Fisch, *On plasma rotation induced by waves in tokamaks*, Phys. Plasmas **20**, 102105 (2013), <https://doi.org/10.1063/1.4823713>.
61. I. Y. Dodin, P. F. Schmit, J. Rocks, and N. J. Fisch, *Negative-mass instability in nonlinear plasma waves*, Phys. Rev. Lett. **110**, 215006 (2013), <https://doi.org/10.1103/PhysRevLett.110.215006>.
62. P. F. Schmit, I. Y. Dodin, J. Rocks, and N. J. Fisch, *Nonlinear amplification and decay of phase-mixed waves in compressing plasma*, Phys. Rev. Lett. **110**, 055001 (2013), <https://doi.org/10.1103/PhysRevLett.110.055001>.

63. I. Y. Dodin and N. J. Fisch, *Axiomatic geometrical optics, Abraham–Minkowski controversy, and photon properties derived classically*, Phys. Rev. A **86**, 053834 (2012), <https://doi.org/10.1103/PhysRevA.86.053834>.
64. I. Y. Dodin and N. J. Fisch, *Adiabatic nonlinear waves with trapped particles: III. Wave dynamics*, Phys. Plasmas **19**, 012104 (2012), <https://doi.org/10.1063/1.3673065>.
65. I. Y. Dodin and N. J. Fisch, *Adiabatic nonlinear waves with trapped particles: II. Wave dispersion*, Phys. Plasmas **19**, 012103 (2012), <https://doi.org/10.1063/1.3662115>.
66. I. Y. Dodin and N. J. Fisch, *Adiabatic nonlinear waves with trapped particles: I. General formalism*, Phys. Plasmas **19**, 012102 (2012), <https://doi.org/10.1063/1.3654030>.
67. I. Y. Dodin and N. J. Fisch, *Nonlinear dispersion of stationary waves in collisionless plasmas*, Phys. Rev. Lett. **107**, 035005 (2011), <https://doi.org/10.1103/PhysRevLett.107.035005>.
68. P. F. Schmit, I. Y. Dodin, and N. J. Fisch, *New wave effects in compressing plasma*, IEEE Trans. Plasma Sci. **39**, 2490 (2011), <https://doi.org/10.1109/TPS.2011.2132151>.
69. P. F. Schmit, I. Y. Dodin, and N. J. Fisch, *Evolution of nonlinear waves in compressing plasma*, Phys. Plasmas **18**, 042103 (2011), <https://doi.org/10.1063/1.3574343>.
70. P. F. Schmit, C. R. Mooney, I. Y. Dodin, and N. J. Fisch, *Evolution of the bump-on-tail instability in compressing plasma*, J. Plasma Phys. **77**, 629 (2011), <https://doi.org/10.1017/S0022377810000747>.
71. A. I. Zhmoginov, I. Y. Dodin, and N. J. Fisch, *A Hamiltonian model of dissipative wave-particle interactions and the negative-mass effect*, Phys. Lett. A **375**, 1236 (2011), <https://doi.org/10.1016/j.physleta.2011.01.041>.
72. I. Y. Dodin and N. J. Fisch, *Vlasov equation and collisionless hydrodynamics adapted to curved space-time*, Phys. Plasmas **17**, 112118 (2010), <https://doi.org/10.1063/1.3497005>.
73. I. Y. Dodin and N. J. Fisch, *Damping of linear waves via ionization and recombination in homogeneous plasmas*, Phys. Plasmas **17**, 112113 (2010), <https://doi.org/10.1063/1.3514166>.
74. P. F. Schmit, I. Y. Dodin, and N. J. Fisch, *Controlling hot electrons by wave amplification and decay in compressing plasma*, Phys. Rev. Lett. **105**, 175003 (2010), <https://doi.org/10.1103/PhysRevLett.105.175003>.
75. I. Y. Dodin and N. J. Fisch, *On the evolution of linear waves in cosmological plasmas*, Phys. Rev. D **82**, 044044 (2010), <https://doi.org/10.1103/PhysRevD.82.044044>.
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