

List of publications of Yuri Trakhinin

- [1] Trakhinin Y. Stabilizing effect of surface tension for the linearized MHDMaxwell free interface problem. *J. Differential Equations* **427** (2025), 143–162.
- [2] Morando A., Secchi P., Trakhinin Y., Trebeschi P., Yuan D. Well-Posedness of the two-dimensional compressible plasma-vacuum interface problem. *Arch. Ration. Mech. Anal.* **248** (2024), 56, 45 pp.
- [3] Trakhinin Yu.L. On local well-posedness of problems with characteristic free boundary for hyperbolic systems of conservation laws. *Russian Math. Surveys* **79**:2 (2024), 325–360.
- [4] Trakhinin, On Well-posedness of the two-dimensional MHDMaxwell free interface problem, *Lobachevskii J. Math.* **45** (2024), 1511–152.
- [5] Secchi P., Trakhinin Y., Wang T. On vacuum free boundary problems in ideal compressible magnetohydrodynamics. *Bull. London Math. Soc.* **55** (2023), 2087–2112.
- [6] Trakhinin Y. Well-posedness for moving interfaces in anisotropic plasmas. *Z. Angew. Math. Phys.* **74** (2023), 142 (12 pp.).
- [7] Trakhinin Y., Wang T. Well-posedness for moving interfaces with surface tension in ideal compressible MHD. *SIAM J. Math. Anal.* **54** (2022), 5888–5921.
- [8] Trakhinin Y. On weak stability of shock waves in 2D compressible elastodynamics. *J. Hyperbolic Differ. Equ.* **19** (2022), 157–173.
- [9] Trakhinin Y., Wang T. Nonlinear stability of MHD contact discontinuities with surface tension. *Arch. Ration. Mech. Anal.* **243** (2022), 1091–1149.
- [10] Trakhinin Y., Wang T. Well-posedness for the free-boundary ideal compressible magnetohydrodynamic equations with surface tension. *Math. Ann.* **383** (2022), 761–808.
- [11] Trakhinin Y., Wang T. Well-posedness of free boundary problem in non-relativistic and relativistic ideal compressible magnetohydrodynamics. *Arch. Ration. Mech. Anal.* **239** (2021), 1131–1176.
- [12] Trakhinin Y. Local solvability of free boundary problems in ideal compressible magnetohydrodynamics with and without surface tension. *J. Appl. Mech. Tech. Phys.* **62** (2021), 684–691.
- [13] Morando A., Secchi P., Trakhinin Y., Trebeschi P. Stability of an incompressible plasma-vacuum interface with displacement current in vacuum. *Math. Methods Appl. Sci.* **43** (2020), 7465–7483.
- [14] Trakhinin Y. Structural stability of shock waves and current-vortex sheets in shallow water magnetohydrodynamics. *Z. Angew. Math. Phys.* **71** (2020), 118 (13 pp.).
- [15] Trakhinin Y. On violent instability of a plasma-vacuum interface for an incompressible plasma flow and a nonzero displacement current in vacuum. *Comm. Math. Sci.* **18** (2020), 321–337.
- [16] Morando A., Secchi P., Trakhinin Y., Trebeschi P. On well-posedness of the plasma-vacuum interface problem with displacement current in vacuum. *J. Phys.: Conf. Ser.* **1666** (2020), 012053 (6 pp.).

- [17] Morando A., Trakhinin Y., Trebeschi P. Structural stability of shock waves in 2D compressible elastodynamics. *Math. Ann.* **378** (2020), 1471–1504.
- [18] Trakhinin Y. Local existence of contact discontinuities in relativistic magnetohydrodynamics. *Siberian Adv. Math.* **30** (2020), 55–76.
- [19] Ruan L., Trakhinin Y. Shock waves and characteristic discontinuities in ideal compressible two-fluid MHD. *Z. Angew. Math. Phys.* **70** (2019), 17 (12 pp).
- [20] Ruan L., Trakhinin Y. Elementary symmetrization of inviscid two-fluid flow equations giving a number of instant results. *Physica D* **391** (2019) 66–71.
- [21] Morando A., Trakhinin Y., Trebeschi P. Local existence of MHD contact discontinuities. *Arch. Ration. Mech. Anal.* **228** (2018), 691–742.
- [22] Trakhinin Y. Well-posedness of the free boundary problem in compressible elastodynamics. *J. Differential Equations* **264** (2018), 1661–1715.
- [23] Trakhinin Y. On well-posedness of the plasma-vacuum interface problem: The case of non-elliptic interface symbol. *Commun. Pure Appl. Anal.* **15** (2016), 1371–1399.
- [24] Morando A., Trakhinin Y., Trebeschi P. On local existence of MHD contact discontinuities. *Discrete and Continuous Dynamical Systems - Series S* **9** (2016), 289–313.
- [25] Morando A., Trakhinin Y., Trebeschi P. Well-posedness of the linearized problem for MHD contact discontinuities. *J. Differential Equations* **258** (2015), 2531–2571.
- [26] Mandrik N., Trakhinin Y. Influence of vacuum electric field on the stability of a plasma-vacuum interface. *Comm. Math. Sci.* **12** (2014), 1065–1100.
- [27] Secchi P., Trakhinin Y. Well-posedness of the plasma-vacuum interface problem. *Nonlinearity* **27** (2014), 105–169.
- [28] Morando A., Trakhinin Y., Trebeschi P. Well-posedness of the linearized plasma-vacuum interface problem in ideal incompressible MHD. *Quar. Appl. Math.* **72** (2014), 549–587.
- [29] Trakhinin Y. Existence and stability of relativistic plasma-vacuum interfaces. In: *Hyperbolic Problems: Theory, Numerics and Applications* (ed. Ancona F., Bressan A., Marcati P., Marson A.), AIMS Series on Applied Mathematics. Vol.8, pp. 999–1006, Springfield: American Institute of Mathematical Sciences, 2014.
- [30] Morando A., Trakhinin Y., Trebeschi P. The linearized plasma-vacuum interface problem in ideal incompressible MHD. In: *Hyperbolic Problems: Theory, Numerics and Applications* (ed. Ancona F., Bressan A., Marcati P., Marson A.), AIMS Series on Applied Mathematics. Vol.8, pp. 1007–1014, Springfield: American Institute of Mathematical Sciences, 2014.
- [31] Secchi P., Trakhinin Y. Well-posedness of the linearized plasma-vacuum interface problem. *Interface Free Bound.* **15** (2013), 323–357.
- [32] Freistühler H., Trakhinin Y. Symmetrizations of RMHD equations and stability of relativistic current-vortex sheets. *Class. Quantum Grav.* **30** (2013), 085012 (17 pp).
- [33] Biberdorf E.A., Blokhin A.M., Trakhinin Y.L. Global modeling of the human arterial system. In: *Circulatory System and Arterial Hypertension: Experimental Investigation, Mathematical and Computer Simulation* (ed. Ivanova L.N., Markel A.L., Blokhin A.M., Mishchenko E.V.), pp. 115–142, New York: Nova Science Publishers, 2012.

- [34] Trakhinin Y. Well-posedness of the free boundary problem for non-relativistic and relativistic compressible Euler equations with a vacuum boundary condition. In: *Hyperbolic Problems: Theory, Numerics and Applications* (ed. Tatsien Li, Song Jiang), pp. 692–700, Singapore: World Scientific, 2012.
- [35] Trakhinin Y. Stability of relativistic plasma-vacuum interfaces. *J. Hyperbolic Differ. Equ.* **9** (2012), 469–509.
- [36] Trakhinin Y. On the well-posedness of a linearized plasma-vacuum interface problem in ideal compressible MHD. *J. Differential Equations* **249** (2010), 2577–2599.
- [37] Trakhinin Y. Local existence for the free boundary problem for nonrelativistic and relativistic compressible Euler equations with a vacuum boundary condition. *Comm. Pure Appl. Math.* **62** (2009), 1551–1594.
- [38] Trakhinin Y. *Elements of the theory of multidimensional hyperbolic systems of conservation laws: a tutorial*. Novosibirsk: Novosibirsk State University, 2009 (in Russian).
- [39] Trakhinin Y. The existence of current-vortex sheets in ideal compressible magnetohydrodynamics. *Arch. Ration. Mech. Anal.* **191** (2009), 245–310.
- [40] Ilin K., Trakhinin Y. On stability of Alfvén discontinuities. *Math. Methods Appl. Sci.* **32** (2009), 307–329.
- [41] Trakhinin Y. On compressible current-vortex sheets. In: *Hyperbolic problems: Theory, Numerics, Applications* (ed. Benzoni-Gavage S., Serre D.), pp. 209–220. Berlin, Heidelberg: Springer-Verlag, 2008.
- [42] Blokhin A.M., Trakhinin Y.L., Biberdorf E.A., Popova N.I. Global modeling of the human arterial system. In: *Cardiovascular system and arterial hypertension: biophysical, genetic and physiological mechanisms, mathematical and computer modeling* (ed. Ivanova L.N., Blokhin A.M., Markel A.L.), pp. 106–134. Novosibirsk: Publishing House of Siberian Branch of Russian Academy of Sciences, 2008 (in Russian).
- [43] Freistühler H., Trakhinin Y. On viscous and inviscid stability of magnetohydrodynamic shock waves. *Physica D* **237** (2008), 3030–3037.
- [44] Morando A., Trakhinin Y., Trebeschi P. Stability of incompressible current-vortex sheets. *J. Math. Anal. Appl.* **347** (2008), 502–520.
- [45] Trakhinin Y. Existence and stability of compressible and incompressible current-vortex sheets. In: *Analysis and simulation of fluid dynamics* (ed. Calgari C., Coulombel J.-F., Goudon T.), Advances in Mathematical Fluid Mechanics, pp. 229–246. Basel: Birkhäuser, 2007.
- [46] Ilin K.I., Trakhinin Y.L. On the stability of Alfvén discontinuity. *Phys. Plasmas* **13** (2006), 102101–102108.
- [47] Blokhin A., Trakhinin Y. *Well-posedness of linear hyperbolic problems: theory and applications*. New York: Nova Science Publishers, 2006, 167 pp.
- [48] Trakhinin Y. Dissipative symmetrizers of hyperbolic problems and their applications to shock waves and characteristic discontinuities. *SIAM J. Math. Anal.* **37** (2006), 1988–2024.

- [49] Trakhinin Yu.L. *On existence of solutions with a surface of strong discontinuity for hyperbolic conservation laws: applications to magnetohydrodynamics and radiation hydrodynamics*. Thesis for a Doctor of Science Degree (highest academic degree in Russia), 371 pages, Novosibirsk, 2006 (in Russian).
- [50] Trakhinin Y. On existence of compressible current-vortex sheets: variable coefficients linear analysis. *Arch. Rational Mech. Anal.* **177** (2005), 331–366.
- [51] Trakhinin Y. On the existence of incompressible current-vortex sheets: study of a linearized free boundary value problem. *Math. Methods Appl. Sci.* **28** (2005), 917–945.
- [52] Blokhin A., Trakhinin Y. On a modified shock front problem for the compressible Navier-Stokes equations. *Quar. Appl. Math.* **62** (2004), 221–234.
- [53] Blokhin A., Trakhinin Yu. *Stability of strong discontinuities in magnetohydrodynamics and electrohydrodynamics*. Moscow–Izhevsk: Institute of Computer Research, 2004 (in Russian).
- [54] Trakhinin Y. A complete 2D stability analysis of fast MHD shocks in an ideal gas. *Comm. Math. Phys.* **236** (2003), 65–92.
- [55] Ilin K.I., Trakhinin Y.L., Vladimirov V.A. The stability of steady magnetohydrodynamic flows with current-vortex sheets. *Phys. Plasmas* **10** (2003), 2649–2658.
- [56] Blokhin A., Trakhinin Y. *Stability of strong discontinuities in magnetohydrodynamics and electrohydrodynamics*. New York: Nova Science Publishers, 2003, 309 pp.
- [57] Blokhin A., Trakhinin Y. Stability of strong discontinuities in fluids and MHD. In: *Handbook of mathematical fluid dynamics, vol. 1* (ed. Friedlander S., Serre D.), pp. 545–652. Amsterdam: Elsevier, 2002.
- [58] Trakhinin Y.L. On stability of fast shock waves in classical and relativistic MHD. In: *Hyperbolic problems: Theory, Numerics, Applications* (ed. Freistühler H., Warnecke G.), pp. 911–919. Basel, Boston, Berlin: Birkhäuser, 2001.
- [59] Trakhinin Y.L. On stability of shock waves in relativistic magnetohydrodynamics. *Quar. Appl. Math.* **59** (2001), 25–45.
- [60] Blokhin A.M., Trakhinin Y.L. On stability of shock waves in a compressible viscous heat conducting gas. *Acta Mechanica* **150** (2001), 267–275.
- [61] Anile A.M., Blokhin A.M., Trakhinin Y.L. Investigation of a mathematical model for radiation hydrodynamics. *Z. angew. Math. Phys.* **50** (1999), 677–697.
- [62] Blokhin A.M., Trakhinin Y.L. Stability of fast parallel MHD shock waves in polytropic gas. *Eur. J. Mech. B/Fluids* **18** (1999), 197–211.
- [63] Blokhin A.M., Trakhinin Y.L. Stability of fast parallel and transversal MHD shock waves in plasma with pressure anisotropy. *Acta Mechanica* **135** (1999), 57–71.
- [64] Blokhin A.M., Trakhinin Y.L. Hyperbolic initial boundary value problems on the stability of strong discontinuities in Continuum Mechanics. In: *Hyperbolic problems: Theory, Numerics, Applications* (ed. Fey M., Jeltsch R.), pp. 77–86, Basel, Boston, Berlin: Birkhäuser, 1999.
- [65] Blokhin A.M., Trakhinin Y.L. Some aspects of the mathematical theory of strong discontinuities in Continuum Mechanics. *Supplemento ai Rendiconti del Circolo Matematico di Palermo serie II*, **57** (1998), 52–56.

- [66] Blokhin A.M., Merazhov I.Z., Trakhinin Yu.L. On the stability of shock waves in the continuum medium with a volume charge. *J. Appl. Mech. Tech. Phys.* **39** (1998), 184–193.
- [67] Blokhin A.M., Merazhov I.Z., Trakhinin Y.L. Investigation of stability of electrodynamic shock waves. *Matematiche (Catania)* **52** (1997), 87–114.
- [68] Blokhin A.M., Romano V., Trakhinin Y.L. Stability of shock waves in relativistic radiation hydrodynamics. *Ann. Inst. H. Poincaré Phys. Théor.* **67** (1997), 145–180.
- [69] Blokhin A.M., Trakhinin Yu.L. Symmetrization of a system of equations of radiative hydrodynamics, and global solvability of the Cauchy problem. *Siberian Math. J.* **37** (1996), 1101–1109.
- [70] Blokhin A.M., Trakhinin Yu.L. Stability of shock waves for one model of radiation hydrodynamics. *J. Appl. Mech. Tech. Phys.* **37** (1996), 775–784.
- [71] Blokhin A.M., Romano V., Trakhinin Y.L. Some mathematical properties of radiating gas model obtained with a variable Eddington factor. *Z. angew. Math. Phys.* **47** (1996), 639–658.
- [72] Blokhin A.M., Trakhinin Yu.L. Investigation of the stability of a fast magnetohydrodynamic shock wave in a plasma with anisotropic pressure. *J. Appl. Mech. Tech. Phys.* **36** (1995), 496–512.
- [73] Blokhin A.M., Trakhinin Y.L. Investigation of the well-posedness of the mixed problem on the stability of fast shock waves in magnetohydrodynamics. *Matematiche (Catania)* **49** (1994), 123–141.
- [74] Blokhin A.M., Trakhinin Y.L. Stability of strong discontinuities in plasma with anisotropic pressure. *J. Magnetohydrodynamics and Plasma Res.* **4** (1994), 109–207.
- [75] Blokhin A.M., Trakhinin Yu.L. A rotational discontinuity in magnetohydrodynamics with anisotropic pressure. II. *Siberian Math. J.* **35** (1994), 250–259.
- [76] Blokhin A.M., Trakhinin Yu.L. A rotational discontinuity in magnetohydrodynamics with anisotropic pressure. I. *Siberian Math. J.* **35** (1994), 9–20.
- [77] Blokhin A.M., Trakhinin Yu.L. On the stability of shock waves in magnetohydrodynamics with anisotropic pressure. *Siberian Math. J.* **34** (1993), 1005–1016.
- [78] Blokhin A.M., Trakhinin Yu.L. A rotational discontinuity in magnetohydrodynamics. *Siberian Math. J.* **34** (1993), 395–411.