# LISTA COMPLETĂ DE LUCRĂRI: VICTOR E. AMBRUȘ

**Articolele marcate cu "*" sunt publicate după doctorat**

**(i)** *Lista celor maximum 10 lucrări considerate de candidat a fi cele mai relevante pentru realizările profesionale proprii și pentru domeniul disciplinelor postului pentru care candidează, precum cărți de autor, articole/studii/capitole, volume editate, lucrări.*

1. ***V.E. Ambruș**, V. Sofonea, *Lattice Boltzmann models based on half-range Gauss-Hermite quadratures*. J. Comput. Phys. **316** (2016) 760–788. DOI: 10.1016/j.jcp.2016.04.010.
2. **V.E. Ambruș**, V. Sofonea, *High-order thermal lattice Boltzmann models derived by means of Gauss quadrature in the spherical coordinate system*. Phys. Rev. E **86** (2012) 016708. DOI: 10.1103/PhysRevE.86.016708.
3. ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Development of transverse flow at small and large opacities in conformal kinetic theory*. Phys. Rev. D **105** (2022) 014031. DOI: 10.1103/PhysRevD.106.076005.
4. ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Establishing the range of applicability of hydrodynamics in high-energy collisions*. Phys. Rev. Lett. **130** (2023) 152301. DOI: 10.1103/PhysRevLett.130.152301.
5. ***V.E. Ambruș**, R. Blaga, *High-order quadrature-based lattice Boltzmann models for the flow of ultrarelativistic rarefied gases*. Phys. Rev. C **98** (2018) 035201. DOI: 10.1103/PhysRevC.98.035201.
6. *D. Wagner, A. Palermo, **V.E. Ambruș**, *Inverse-Reynolds-dominance approach to transient fluid dynamics*. Phys. Rev. D **106** (2022) 016013. DOI: 10.1103/PhysRevD.106.076005.
7. ***V.E. Ambruș**, F. Sharipov, V. Sofonea, *Comparison of the Shakhov and ellipsoidal models for the Boltzmann equation and DSMC for ab initio-based particle interactions*. Comput. Fluids **211** (2020) 104637. DOI: 10.1016/j.compfluid.2020.104637.
8. ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Opacity dependence of transverse flow, preequilibrium, and applicability of hydrodynamics in heavy-ion collisions*. Phys. Rev. D **107** (2023) 094013. DOI: 10.1103/PhysRevD.107.094013.
9. **V.E. Ambruș**, V. Sofonea, *Implementation of diffuse reflection boundary conditions using lattice Boltzmann models based on Gauss-Laguerre quadratures*. Phys. Rev. E **89** (2014) 041301(R). DOI: 10.1103/PhysRevE.89.041301.
10. ***V.E. Ambruș**, *Transport coefficients in relativistic kinetic theory*. Phys. Rev. C **97** (2018) 024914. DOI: 10.1103/PhysRevC.97.024914.

**Articolele marcate cu "*" sunt publicate după doctorat**

**(ii).** *Titlul tezei sau al tezelor de doctorat (pentru ocuparea postului de profesor universitar este necesar și titlul tezei de abilitare)*

- Titlul tezei de doctorat: *Dirac fermions on rotating space-times*
- Teza e disponibilă la adresa: https://etheses.whiterose.ac.uk/id/eprint/7527/.

**Articolele marcate cu "*" sunt publicate după doctorat**

**(iii)** *Lista brevetelor de invenție și a altor titluri de proprietate industrială*
Nu e cazul.

**Articolele marcate cu "*" sunt publicate după doctorat**

**(iv)** *Lista cărților de autor și a volumelor editate și publicate*

[1] *M. Ștef, **V.E. Ambruș**, A.M. Barb, *Teste grilă de Fizică*. Ed.Universităţii de Vest, Timişoara, 2016. http://www.librarie.net/p/279002/Teste-Grila-Fizica.

**Articolele marcate cu "*" sunt publicate după doctorat**

**(v)** *Lista capitolelor de cărți*

[1] ***V.E. Ambruș**, V. Sofonea, *Quadrature-Based Lattice Boltzmann Models for Rarefied Gas Flow*. Flowing Matter (Ed. F. Toschi, M. Sega), Springer, 2019. DOI: 10.1007/978-3-030-23370-9_9.

[2] ***V.E. Ambruș**, E. Winstanley, *Exact solutions in quantum field theory under rotation*. Strongly Interacting Matter Under Rotation (Ed. F. Becattini, J. Liao, M. Lisa), Lecture Notes in Physics **987**, Springer, 2021. DOI: 10.1007/978-3-030-71427-7_4.

**Articolele marcate cu "*" sunt publicate după doctorat**

**(vi)** *Lista articolelor / studiilor in extenso, publicate în reviste din fluxul științific internațional principal*

[1] ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Collective dynamics in heavy and light-ion collisions–II) Determining the origin of collective behavior in high-energy collisions*. Phys. Rev. D **111** (2025) 054025. DOI: 10.1103/PhysRevD.111.054025.

[2] ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Collective dynamics in heavy and light-ion collisions–I) Kinetic Theory vs. Hydrodynamics*. Phys. Rev. D **111** (2025) 054024. DOI: 10.1103/PhysRevD.111.054024.

[3] *S. Morales-Tejera, **V.E. Ambruș**, M.N. Chernodub, *Vortical waves in a quantum fluid with vector, axial, and helical charges. II. Dissipative effects*. Eur. J. Phys. C **85** (2025) 1. DOI: 10.1140/epjc/s10052-025-13770-5.

[4] *S. Morales-Tejera, **V.E. Ambruș**, M. N. Chernodub, *Vortical waves in a quantum fluid with vector, axial, and helical charges. I. Non-dissipative transport*. Eur. J. Phys. C **84** (2024) 1320. DOI: 10.1140/epjc/s10052-024-13713-6.

[5] ***V.E. Ambruș**, M. N. Chernodub, *Helical separation effect and helical heat transport for Dirac fermions*. Eur. J. Phys. C **84** (2024) 1.
DOI: 10.1140/epjc/s10052-024-12636-6.

[6] *D. Wagner, **V.E. Ambruș**, E. Molnár, *Analytical structure of the binary collision integral and the ultrarelativistic limit of transport coefficients of an ideal gas*. Phys. Rev. D **109** (2024) 056018. DOI: 10.1103/PhysRevD.109.056018.

[7] ***V.E. Ambruș**, E. Molnár, D.H. Rischke, *Relativistic second-order dissipative and anisotropic fluid dynamics in the relaxation-time approximation for an ideal gas of massive particles*. Phys. Rev. D **109** (2024) 076001. DOI: 10.1103/PhysRevD.109.076001.

[8] ***V.E. Ambruș**, M.N. Chernodub, *Acceleration as a circular motion along an imaginary circle: Kubo-Martin-Schwinger condition for accelerating field theories in imaginary-time formalism*. Phys. Lett. B **855** (2024) 138757. DOI: 10.1016/j.physletb.2024.138757.

[9] ***V.E. Ambruș**, E. Molnár, *Shakhov-type extension of the relaxation time approximation in relativistic kinetic theory and second-order fluid dynamics*. Phys. Lett. B **855** (2024) 138795. DOI: 10.1016/j.physletb.2024.138795.

[10] ***V.E. Ambruș**, D. Wagner, *High-order Shakhov-like extension of the relaxation time approximation in relativistic kinetic theory*. Phys. Rev. D **110** (2024) 056002.
DOI: 10.1103/PhysRevD.110.056002.

[11] *P. Singha, **V.E. Ambruș**, M.N. Chernodub, *Inhibition of the splitting of the chiral and deconfinement transition due to rotation in QCD: The phase diagram of the linear sigma model coupled to Polyakov loops*. Phys. Rev. D **110** (2024) 094053. DOI: 10.1103/PhysRevD.110.094053.

[12] ***V.E. Ambruș**, M.N. Chernodub, *Rigidly rotating scalar fields: Between real divergence and imaginary fractalization*. Phys. Rev. D **108** (2023) 085016. DOI: 10.1103/PhysRevD.108.085016.

[13] ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Opacity dependence of transverse flow, preequilibrium, and applicability of hydrodynamics in heavy-ion collisions*. Phys. Rev. D **107** (2023) 094013. DOI: 10.1103/PhysRevD.107.094013.

[14] ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Establishing the range of applicability of hydrodynamics in high-energy collisions*. Phys. Rev. Lett. **130** (2023) 152301. DOI: 10.1103/PhysRevLett.130.152301.

[15] ***V.E. Ambruș**, M. N. Chernodub, *Hyperon–anti-hyperon polarization asymmetry in relativistic heavy-ion collisions as an interplay between chiral and helical vortical effects*. Eur. Phys. J. C **83** (2023) 111. DOI: 10.1140/epjc/s10052-023-11244-0.

[16] ***V.E. Ambruș**, E. Molnár, D.H. Rischke, *Transport coefficients of second-order relativistic fluid dynamics in the relaxation-time approximation*. Phys. Rev. D **106** (2022) 076005. DOI: 10.1103/PhysRevD.106.076005.

[17] ***V.E. Ambruș**, L. Bazzanini, A. Gabbana, D. Simeoni, S. Succi, R. Tripiccione, *Fast kinetic simulator for relativistic matter*. Nat. Comput. Sci. **2** (2022) 641. DOI: 10.1038/s43588-022-00333-x.

[18] *D. Wagner, A. Palermo, **V.E. Ambruș**, *Inverse-Reynolds-dominance approach to transient fluid dynamics*. Phys. Rev. D **106** (2022) 016013. DOI: 10.1103/PhysRevD.106.076005.

[19] ***V.E. Ambruș**, R. Ryblewski, R. Singh, *Spin waves in spin hydrodynamics*. Phys. Rev. D **106** (2022) 014018. DOI: 10.1103/PhysRevD.106.076005.

[20] ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Development of transverse flow at small and large opacities in conformal kinetic theory*. Phys. Rev. D **105** (2022) 014031. DOI: 10.1103/PhysRevD.106.076005.

[21] ***V.E. Ambruș**, M.N. Chernodub, *Hyperon–anti-hyperon polarization asymmetry in relativistic heavy-ion collisions as an interplay between chiral and helical vortical effects*. Eur. Phys. J. C **82** (2022) 61. DOI: 10.1140/epjc/s10052-022-10002-y.

[22] *__V.E. Ambruș__, S. Busuioc, J. A. Fotakis, K. Gallmeister, C. Greiner, *Bjorken flow attractors with transverse dynamics*. Phys. Rev. D **104** (2021) 094022. DOI: 10.1103/PhysRevD.104.094022.

[23] *__V.E. Ambruș__, E. Winstanley, *Vortical effects for free fermions on anti-de Sitter space-time*. Symmetry **13** (2021) 2019. DOI: 10.3390/sym13112019.

[24] *M.N. Chernodub, __V.E. Ambruș__, *Phase diagram of helically imbalanced QCD matter*. Phys. Rev. D **103** (2021) 094015. DOI: 10.1103/PhysRevD.103.094015.

[25] *__V.E. Ambruș__, F. Sharipov, V. Sofonea, *Comparison of the Shakhov and ellipsoidal models for the Boltzmann equation and DSMC for ab initio-based particle interactions*. Comput. Fluids **211** (2020) 104637. DOI: 10.1016/j.compfluid.2020.104637.

[26] *S. Busuioc, H. Kusumaatmaja, __V.E. Ambruș__, *Axisymmetric flows on the torus geometry*. J. Fluid Mech. **901** (2020) A9. DOI: 10.1017/jfm.2020.440.

[27] *S. Busuioc, __V.E. Ambruș__, T. Biciușcă, V. Sofonea, *Two-dimensional off-lattice Boltzmann model for van der Waals fluids with variable temperature*. Comput. Math. Appl. **79** (2020) 111-140. DOI: 10.1016/j.camwa.2018.12.015.

[28] *__V.E. Ambruș__, *Helical massive fermions under rotation*. J. High Energ. Phys. **8** (2020) 16. DOI: 10.1007/JHEP08(2020)016.

[29] *__V.E. Ambruș__, S. Busuioc, A. J. Wagner, F. Paillusson, H. Kusumaatmaja, *Multicomponent flow on curved surfaces: A vielbein lattice Boltzmann approach*. Phys. Rev. E **100** (2019) 063306. DOI: 10.1103/PhysRevE.100.063306.

[30] *S. Busuioc, __V.E. Ambruș__, *Lattice Boltzmann models based on the vielbein formalism for the simulation of flows in curvilinear geometries*. Phys. Rev. E **99** (2019) 033304. DOI: 10.1103/PhysRevE.99.033304.

[31] *G. Negro, S. Busuioc, __V.E. Ambruș__, G. Gonnella, A. Lamura, V. Sofonea, *Comparison between isothermal collision-streaming and finite-difference lattice Boltzmann models*. Int. J. Mod. Phys. C **30** (2019) 1941005. DOI: 10.1142/s0129183119410055.

[32] *V. Sofonea, T. Biciușcă, S. Busuioc, __V.E. Ambruș__, G. Gonnella, A. Lamura, *Corner-transport-upwind lattice Boltzmann model for bubble cavitation*. Phys. Rev. E **97** (2018) 023309. DOI: 10.1103/PhysRevE.97.023309.

[33] *__V.E. Ambruș__, V. Sofonea, *Half-range lattice Boltzmann models for the simulation of Couette flow using the Shakhov collision term*. Phys. Rev. E **98** (2018) 063311. DOI: 10.1103/PhysRevE.98.063311.

[34] *__V.E. Ambruș__, R. Blaga, *High-order quadrature-based lattice Boltzmann models for the flow of ultrarelativistic rarefied gases.* Phys. Rev. C **98** (2018) 035201. DOI: 10.1103/PhysRevC.98.035201.

[35] *__V.E. Ambruș__, *Transport coefficients in ultrarelativistic kinetic theory.* Phys. Rev. C **97** (2018) 024914. DOI: 10.1103/PhysRevC.97.024914.

[36] *__V.E. Ambruș__, C. Kent, E. Winstanley, *Analysis of scalar and fermion quantum field theory on anti-de Sitter spacetime.* Int. J. Mod. Phys. D **27** (2018) 1843014. DOI: 10.1142/s0218271818430149.

[37] *__V.E. Ambruș__, *Quantum non-equilibrium effects in rigidly-rotating thermal states.* Phys. Lett. B **771** (2017) 151–156. DOI: 10.1016/j.physletb.2017.05.038.

[38] *__V.E. Ambruș__, E. Winstanley, *Thermal expectation values of fermions on anti-de Sitter space-time.* Class. Quantum Grav. **34** (2017) 145010. DOI: 10.1088/1361-6382/aa7863.

[39] *__V.E. Ambruș__, I. Cotăescu, *Maxwell-Jüttner distribution for rigidly rotating flows in spherically symmetric spacetimes using the tetrad formalism.* Phys. Rev. D **94** (2016) 085022. DOI: 10.1103/PhysRevD.94.085022.

[40] *__V.E. Ambruș__, V. Sofonea, *Application of mixed quadrature lattice Boltzmann models for the simulation of Poiseuille flow at non-negligible values of the Knudsen number.* J. Comput. Science **17** (2016) 403–417. DOI: 10.1016/j.jocs.2016.03.016.

[41] *__V.E. Ambruș__, V. Sofonea, *Lattice Boltzmann models based on half-range Gauss-Hermite quadratures.* J. Comput. Phys. **316** (2016) 760–788. DOI: 10.1016/j.jcp.2016.04.010.

[42] *__V.E. Ambruș__, E. Winstanley, *Rotating fermions inside a cylindrical boundary.* Phys. Rev. D **93** (2016) 104014. DOI: 10.1103/PhysRevD.93.104014.

[43] *P. Fede, V. Sofonea, R. Fournier, S. Blanco, O. Simonin, G. Lepoutere, **V.E. Ambruș**, *Lattice Boltzmann model for predicting the deposition of inertial particles transported by a turbulent flow.* Int. J. Multiphase Flow **76** (2015) 187–197. DOI: 10.1016/j.ijmultiphaseflow.2015.07.004.

[44] *__V.E. Ambruș__, E. Winstanley, *Renormalised fermion vacuum expectation values on anti-de Sitter space-time.* Phys. Lett. B **749** (2015) 597–602. DOI: 10.1016/j.physletb.2015.08.045.

[45] **V.E. Ambruș**, V. Sofonea, *Lattice Boltzmann models based on Gauss quadratures.* Int. J. Mod. Phys. C **25** (2014) 1441011. DOI: 10.1142/S0129183114410113.

[46] **V.E. Ambruș**, E. Winstanley, *Rotating quantum states.* Phys. Lett. B **734** (2014) 296–301. DOI: 10.1016/j.physletb.2014.05.031.

[47] **V.E. Ambruș**, V. Sofonea, *Implementation of diffuse reflection boundary conditions using lattice Boltzmann models based on Gauss-Laguerre quadratures.* Phys. Rev. E **89** (2014) 041301(R). DOI: 10.1103/PhysRevE.89.041301.

[48] B. Piaud, S. Blanco, R. Fournier, **V.E. Ambruș**, V. Sofonea, *Gauss quadratures - the keystone of lattice Boltzmann models.* Int. J. Mod. Phys. C **25** (2014) 1340016. DOI: 10.1142/S0129183113400160.

[49] **V.E. Ambruș**, V. Sofonea, *High-order thermal lattice Boltzmann models derived by means of Gauss quadrature in the spherical coordinate system.* Phys. Rev. E **86** (2012) 016708. DOI: 10.1103/PhysRevE.86.016708.

**Articolele marcate cu "*" sunt publicate după doctorat**

**(vii)** *Lista publicațiilor științifice in extenso, apărute în lucrări ale principalelor conferințe internaționale de specialitate*

1. ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Attractors for flow observables in 2+ 1D Bjorken flow.* AIP Conf. Proc. 3181 (2024) 050004. DOI: 10.1063/5.0215368.
2. *R. Singh, **V.E. Ambruș**, R. Ryblewski, *Dissipative effects on the propagation of spin modes.* PoS SPIN2023 (2024) 235. DOI: 10.22323/1.456.0235.
3. *C. Werthmann, **V.E. Ambruș**, S. Schlichting, *Establishing the Range of Applicability of Hydrodynamics in High-Energy Collisions.* EPJ Web of Conferences 296 (2024) 05003. DOI: 10.1051/epjconf/202429605003.
4. ***V.E. Ambruș**, S. Schlichting, C. Werthmann, *Development of transverse flow for small and large systems in conformal kinetic theory.* Acta Phys. Pol. B Proc. Suppl. **16** (2023) 1-A32. DOI: 10.5506/APhysPolBSupp.16.1-A32.
5. *Ș. T. Kis, **V.E. Ambruș**, *Implicit-explicit finite-difference lattice Boltzmann model with varying adiabatic index.* AIP Conf. Proc. **2218** (2020) 050008. DOI: 10.1063/5.0001069.
6. ***V.E. Ambruș**, *Fermion condensation under rotation on anti-de Sitter space.* Acta Phys. Pol. B Proc. Suppl. **13** (2020) 199. DOI: 10.5506/APHYSPOLBSUPP.13.199.
7. ***V.E. Ambruș**, F. Sharipov, V. Sofonea, *Lattice Boltzmann approach to rarefied gas flows using half-range Gauss-Hermite quadratures: Comparison to DSMC results based on ab initio potentials.* AIP Conf. Proc. **2132** (2019) 060012. DOI: 10.1063/1.5119552.

8. *__V.E. Ambruș__, C. G. Guga-Roșian, *Lattice Boltzmann study of the one-dimensional boost-invariant expansion with anisotropic initial conditions*. AIP Conf. Proc. **2071** (2019) 020014. DOI: 10.1063/1.5090061.

9. *__V.E. Ambruș__, E. Winstanley, *Quantum Corrections in Thermal States of Fermions on Anti-de Sitter Space-time*. AIP Conf. Proc. **1916** (2017) 020005. DOI: 10.1063/1.5017425.

10. *S. Busuioc, __V.E. Ambruș__, V. Sofonea, *Lattice Boltzmann simulation of droplet formation in T-junction geometries*. AIP Conf. Proc. **1796** (2017) 020009. DOI: 10.1063/1.4972357.

11. *R. Blaga, __V.E. Ambruș__, *Quadrature-based lattice Boltzmann model for relativistic flows*. AIP Conf. Proc. **1796** (2017) 020010. DOI: 10.1063/1.4972358.

12. *__V.E. Ambruș__, *Anderson-Witting transport coefficients for flows in general relativity*. AIP Conf. Proc. **1796** (2017) 020006. DOI: 10.1063/1.4972354.

13. *__V.E. Ambruș__, E. Winstanley, *Massless rotating fermions inside a cylinder*. AIP Conf. Proc. **1694** (2015) 020011. DOI: 10.1063/1.4937237.

14. *__V.E. Ambruș__, E. Winstanley, *Fermions on adS*. Springer Proc. Phys. **170** (2015) 331–336. DOI: 10.1007/978-3-319-20046-0_39.

15. __V.E. Ambruș__, E. Winstanley, *Dirac fermions on an anti-de Sitter background*. AIP Conf. Proc. **1634** (2014) 40. DOI: 10.1063/1.4903012.

16. *__Victor E. Ambruș__, E. Winstanley, *Rotating fermions*. The Thirteenth Marcel Grossmann Meeting, pp. 1965-1967 (2015). DOI: 10.1142/9789814623995_0330.

17. __V.E. Ambruș__, V. Sofonea, *Thermal Lattice Boltzmann models derived by Gauss quadrature using the spherical coordinate system*. J. Phys.: Conf. Ser. **362** (2012) 012043. DOI: 10.1088/1742-6596/362/1/012043.

**Articolele marcate cu "*" sunt publicate după doctorat**

**(viii)** *Alte lucrări și contribuții științifice sau, după caz, din domeniul creației artistice*

Nu e cazul.