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Professional experience

- 2022– Emmy Noether research group leader, **Institute for Theoretical Physics, Heidelberg University**
Six-year research project on the *Many-body QCD phenomena in high-energy proton and nuclear collisions* funded by DFG Emmy Noether Programme.
Principle investigator in the collaborative research center SFB 1225 *Isolated quantum systems and universality in extreme conditions*.
- 2019–2022 Senior research fellow, **Theoretical Physics Department, CERN**
Research on dense and hot QCD matter, Standard Model processes in nuclear environment, future ion experiments, Bayesian estimator of perturbative uncertainties MiHO.
- 2017–2019 Postdoctoral researcher, **Institute for Theoretical Physics, Heidelberg University**
Member of collaborative research center SFB 1225 *Isolated quantum systems and universality in extreme conditions*.
Work on non-equilibrium QCD physics using quark and gluon kinetic theory, pre-equilibrium kinetic propagator `KØMPØST`, resonance decay code `FastReso`.
- 2014–2017 Research assistant, **Nuclear Theory Group, Stony Brook University**
PhD dissertation work.

Education

- 2012–2017 **Stony Brook University**, United States, Doctor of Philosophy in Physics
Max Dresden Prize for outstanding theoretical thesis *Fluctuations in ultra-relativistic heavy ion collisions*, advisor Prof. Derek Teaney, degree awarded on 19/05/2017
- 2011–2012 **University of Cambridge**, United Kingdom, Master of Mathematics (Part III Maths) graduated with distinction
- 2008–2011 **University of Cambridge**, United Kingdom, Bachelor of Arts (Mathematical Tripos) 1st class degree

Awards and distinctions

- 05/05/2022 6-year junior research group leader grant from the Emmy Noether Programme of German Research Foundation (DFG) (accepted)
- 22/02/2021 6-year junior researcher position from the Portuguese Foundation for Science and Technology (FCT) (declined)
- 09/11/2019 Nuclear Physics A Young Scientist Award for the best theory talk at Quark Matter 2019
- 02/05/2017 Max Dresden Prize for outstanding theoretical thesis
- 25/07/2016 APS FGSA Travel Award for Excellence in Graduate Research
- 23/05/2013 David Fox award for the outstanding Teaching Assistant

Professional services

Events organised

- 2023 Co-organiser of (virtual) **Third Lithuanian Particle Physics Meeting**, 15 June 2023. Convener of the track *Event properties and hydro in small and large systems* at **Workshop on QCD Challenges from pp to AA**, 13-17 Feb 2023, Padova, Italy.
- 2022 Co-organiser of the second edition of **The International Conference on Quantum Systems in Extreme Conditions (QSEC2022)**, 14-18 November 2022, Bingen, Germany.
- Co-organiser of (virtual) **Second Lithuanian Particle Physics Meeting**, 11 April 2022.
- 2021 Co-organiser of (virtual) workshop on **Opportunities of OO and pO collisions at the LHC**, 4-10 Feb 2021 and the co-author of the summary report.
- Co-organiser of (virtual) **First Lithuanian Particle Physics Meeting**, 9 March 2021.
- 2019 Convener of discussion group on *Connections between QGP-like observables in small systems* at **Workshop on QCD Challenges from pp to AA**, 19-23 Aug 2019, Lund, Sweden, and the editor of the summary report.
- Convener of discussion group on *Implementations of critical dynamics* at **EMMI Rapid Reaction Task Force: Dynamics of critical fluctuations**, 8-12 April 2019, Darmstadt, Germany, and the editor of the summary report.

Refereeing

Physical Review Letters, Physical Review C and D, Physics Letters B, Nuclear Physics B, Journal of High Energy Physics

Teaching

Heidelberg University

- April 11-14, 2023 **Invited lectures** on *Non-equilibrium phenomena and thermalisation in Quantum Chromodynamics* at the 50th Heidelberg Physics Graduate Days
- 2018-2019 **Co-Head tutor** for Quantum Field Theory and Advanced Quantum Field Theory courses. Responsible for preparing homework and exam problems, typesetting lecture notes and overseeing other tutors (winter and summer semesters).
- 2018 **Co-organiser** of a master level student lead seminar on QCD matter in heavy ion collisions (summer semester).
- 2017-2018 **Head tutor** for Quantum Field Theory course. Responsible for preparing homework, exam problems and overseeing nine other tutors (winter semester).

Stony Brook University

- 2014 **Recitation instructor** for calculus based undergraduate electromagnetism and mechanics courses (2 semesters). Selected student responses:
- I think the instructor was more valuable than the course itself.*
- I would love to see him become a professor one day and attain his career goals.*
- He would do a fantastic job in teaching the entire course.*
- 2012–2013 **Teaching assistant** for undergraduate mechanics laboratory (2 semesters), received David Fox award for outstanding Teaching Assistant.

National Student Academy (NMA)

- 2020– Head of Physics section at NMA – additional training school for gifted high-school children in Lithuania. Responsible for the distant learning program and in-person sessions.
- 2008–2011 Trained a number of young gifted Lithuanian students for physics competitions through distant learning programs and lecturing at summer schools.

Invited lectures

- 2021 two lectures at **CERN-Fermilab Hadron Collider Physics Summer School** (online) on *High-Density QCD with Proton & Ion Beams*, Geneva, Switzerland

Mentoring

- 2023-present Master thesis advisor for Jannis Gebhard (Heidelberg University)
- 2022-present PhD advisor for Fabian Zhou (Heidelberg University)
 - 2020 Supervised a visiting PhD student Robin Törnkvist (Lund University)
 - 2019 Informal mentoring of PhD students Oscar Garcia-Montero (Heidelberg University), Giuliano Giacalone (Université Paris Saclay) and Aleksandr Mikheev (Heidelberg University).
 - 2018 Co-supervisor of a bachelor project by Paul Wiesemeyer (Heidelberg University) on radiative photon production in QGP.

Outreach

- 2023 Co-organiser of Girls' Day on April 27th at Heidelberg Physics Department with 134 registrations at 16 workshops.
- 2022 Organised the display of *Forces of Nature* poster series celebrating women in Physics at CERN Theoretical Physics department.
- 2021 Conducted a virtual CMS tour and gave a talk about CERN during NMA winter session.
- 2020 Gave two talks to high-school children in Lithuania about science and work at CERN.
- 2019 Was interviewed about my work for French science magazine: J.-B. Veyrieras, *Découverte de la première flèche du temps*, Science & Vie, n°1228 (2020)
 - Prepared physics questions for an on-line science quiz competition *Išmanioji diena* held on 10/10/2019, Lithuania
- 2017 Prepared two introductory problem sets on elementary particles for high school students at Vilnius University Particle physics outreach group
- 2008-2013 One of founders and organisers of student-run physics team competition at Vilnius Lyceum, created a number of physics problems for the competition.
- 2007-2012 Active alumnus of NMA; spoke twice on Lithuanian national TV about education of talented children.

Languages

Lithuanian native, enthusiastic teacher	French elementary (A2)
English fluent, higher education in English	Russian basic conversational
German upper intermediate (B2)	Chinese beginner, passed HSK level II test

Programming

Programming	Extensive numerically oriented coding in C++ and Python, previous experience with Fortran and Matlab, good working knowledge of Mathematica
General IT	Git (source code management), L ^A T _E X (word processing), Inkscape (vector graphics), GNU/Linux (operating system), Gnuplot (graphing), HTML5 (web building)

Invited presentations

- 22/06/2023 plenary talk at **VII Initial Stages Conference** on *Motivation and predictions for O-O and p-O collisions*, Copenhagen, Denmark
- 06/06/2023 talk at **RHIC Beam Energy Scan seminar series** (online) on *Thermalization and collectivity in small and large systems*
- 01/03/2023 talk at **Machine Learning approaches in Lattice QCD workshop** on *An analysis of Bayesian estimates for missing higher orders in perturbative calculations*, Munich, Germany
- 25/10/2022 talk at **Gluodynamics workshop** on *QCD thermalisation in kinetic theory*, Orsay, France
- 22/07/2022 talk at **Predictions for sPHENIX RBRC workshop (remote)** on *Jet and hadron nuclear modification factors*, BNL, United States
- 19/05/2022 talk at **X Large Hadron Collider Physics Conference (online)** on *Energy loss in small systems*, Taipei, Taiwan
- 13/05/2022 plenary talk at **Student Conference Mathematics and Natural Sciences: Theory and Application** on *Dalelių fizikos tyrimai CERN: naujų fundamentalių reiškinių ir dalelių paieškos*, Kaunas, Lithuania
- 25/11/2021 review talk at **III Italian Workshop about high energy physics with heavy ions** on *Theoretical overview on space-time evolution of heavy-ion collisions and QGP temperature*, Padova, Italy
- 31/08/2021 two lectures at **CERN-Fermilab Hadron Collider Physics Summer School** (online)
- 02/09/2021 on *High-Density QCD with Proton & Ion Beams*, Geneva, Switzerland
- 30/07/2021 talk at **INT Program: Probing QCD at High Energy and Density with Jets** (online) on *Equilibration and collective effects in QCD kinetic theory*, Seattle, Washington, USA
- 27/07/2021 review talk at **European Physical Society Conference on High Energy Physics** (online) on *High-energy QCD Matter Theory*, Hamburg, Germany
- 28/06/2021 plenary talk at **Strong and Electro-Weak Matter Conference** (online) on *Matching glasma to hydro via kinetic theory*, Paris, France
- 03/03/2021 talk at **145th LHC Committee Meeting** (online) on *Opportunities of OO and pO collisions at the LHC*, Geneva, Switzerland
- 15/01/2021 plenary talk at **VI Initial Stages Conference** (online) on *What do we learn from small systems about the physics of heavy ion collisions?*, Rehovot, Israel
- 24/09/2020 talk at **ALICE Physics Week (online)** on *Partonic rescattering in light nucleus collisions*, Bucharest, Hungary
- 28/05/2020 talk at **VIII Large Hadron Collider Physics Conference (online)** on *Equilibration of QGP in small systems*, Paris, France
- 06/12/2019 talk at **XIX Zimányi School Winter Workshop** on *Pre-equilibrium phenomena in Quark Gluon Plasma*, Budapest, Hungary

- 25/11/2019 talk at **Theoretical Foundations of Relativistic Hydrodynamics Workshop** on *Pre-scaling, hydrodynamic attractors and entropy production in heavy ion collisions*, Banff, Canada
- 01/11/2019 talk at **New Development of Hydrodynamics and its applications in Heavy-ion Collisions Workshop** on *Hydrodynamic attractors, initial state energy and particle production in relativistic nuclear collisions*, Shanghai, China
- 13/09/2019 talk at **XLIX International Symposium on Multiparticle Dynamics** on *Equilibration in Quark Gluon Plasma*, Santa Fe, New Mexico, USA
- 25/06/2019 plenary talk at **V Initial Stages Conference** on *Matching of initial conditions to hydro evolution*, New York, USA
- 06/04/2019 talk at **XIV Polish Workshop on Relativistic Heavy-Ion Collisions** on *Chemical equilibration in hadronic collisions*, Krakow, Poland
- 01/08/2018 parallel talk at **XIII Quark Confinement and the Hadron Spectrum Conference**, *2+1D simulations of pre-equilibrium stage with QCD kinetic theory*, Dublin, Ireland
- 18/05/2018 plenary talk at **XXVII Quark Matter Conference** on *Initial conditions for nuclear collisions: theory overview*, Venice, Italy
- 02/10/2017 talk at **XII High-pT Physics Workshop** on *Initial conditions for heavy ion collisions*, Bergen, Norway
- 15/06/2017 talk at **XII Workshop on Particle Correlations and Femtoscopy** on *Kinetic theory equilibration for realistic heavy ion initial conditions*, Amsterdam, The Netherlands
- 06/03/2015 talk at **Collectivity in Small Colliding Systems with High Multiplicity Workshop** on *Principal Component Analysis and Subleading Flow*, Brookhaven National Lab, New York, United States

Contributed presentations

- 02/12/2022 **QCD@LHC 2022 Conference**, Paris, France
- 06/04/2022 **XXIX Quark Matter Conference**, Krakow, Poland
- 07/10/2021 **XLIV National Lithuanian Physics Conference**, Vilnius, Lithuania
- 24/05/2021 **Phenomenology Symposium** (online), Pittsburgh, United States
- 09/03/2021 **First Lithuanian Particle Physics Meeting** (online), Vilnius, Lithuania
- 03/06/2020 **X Hard Probes** (online), Austin, USA
- 06/11/2019 **XXVIII Quark Matter Conference**, Wuhan, China, BEST THEORY TALK
- 22/09/2019 **Quantum Systems in Extreme Conditions**, Heidelberg, Germany
- 10/06/2019 **XVIII Strangness in Quark Matter**, Bari, Italy
- 14/01/2019 **XLVII Workshop on Gross Properties of Nuclei and Nuclear Excitations**, Hirschegg, Austria
- 23/05/2019 **Origins of Correlations in High Energy Collisions**, INT, Seattle, Washington, United States
- 09/04/2019 **EMMI RRTE: Dynamics of critical fluctuations**, Darmstadt, Germany
- 02/10/2018 **IX Hard Probes conference**, Aix-Les-Bains, France
- 27/08/2018 **Probing the Quark-Gluon Plasma with collective phenomena and heavy quarks**, MIAPP, Munich, Germany
- 19/09/2017 **IV Initial Stages**, Krakow, Poland
- 08/08/2017 **Critical Point and Onset of Deconfinement**, Stony Brook, New York, United States
- 07/02/2017 **XXVI Quark Matter**, Chicago, Illinois, United States
- 19/09/2016 **VII Hot Quarks**, South Padre Island, Texas, United States
- 25/05/2016 **III Initial Stages**, Lisbon, Portugal

- 22/07/2015 **Correlations and Fluctuations in p+A and A+A Collisions**, INT, Seattle, Washington, United States
- 27/03/2015 **Ohio-Region APS meeting**, Kent, Ohio, United States

List of publications

2023

1. M. Heller, A. Mazeliauskas, T. Preis, *Prescaling relaxation to nonthermal attractors*, arXiv:2307.07545
2. Belmont et al., *Predictions for the sPHENIX physics program*, arXiv:2305.15491
3. T. Gorda, O. Komoltsev, A. Kurkela, A. Mazeliauskas, *Bayesian uncertainty quantification of perturbative QCD input to the neutron-star equation of state*, **JHEP** 06 (2023) 002, arXiv:2303.02175

2022

4. M. Attems, J. Brewer, G. M. Innocenti, A. Mazeliauskas, S. Park, W. van der Schee and U. A. Wiedemann, *Medium-enhanced $c\bar{c}$ radiation*, arXiv:2209.13600
5. M. Attems, J. Brewer, G. M. Innocenti, A. Mazeliauskas, S. Park, W. van der Schee and U. A. Wiedemann, *The medium-modified $g \rightarrow c\bar{c}$ splitting function in the BDMPS-Z formalism*, **JHEP** 01 (2023) 080, arXiv:2203.11241
6. A. N. Mikheev, A. Mazeliauskas and J. Berges, *Stability analysis of non-thermal fixed points in longitudinally expanding kinetic theory*, **Phys. Rev. D** 105, 116025 (2022), arXiv:2203.02299

2021

7. W. Florkowski, A. Kumar, A. Mazeliauskas, R. Ryblewski, *Effect of thermal shear on longitudinal spin polarization in a thermal model*, **Phys. Rev. C** 105, 064901 (2022), arXiv:2112.02799
8. J. Brewer, A. Huss, A. Mazeliauskas, W. van der Schee, *Ratios of jet and hadron spectra at LHC energies: measuring high- p_T suppression without a pp reference*, **Phys.Rev.D** 105, 074040 (2022), arXiv:2108.13434
9. C. Duhr, A. Huss, A. Mazeliauskas, R. Szafron, *Analysis of Bayesian estimates for missing higher orders in perturbative calculations*, **JHEP** 09 (2021) 122, arXiv:2106.04585, [https://doi.org/10.1007/JHEP09\(2021\)122](https://doi.org/10.1007/JHEP09(2021)122)
10. A. Andronic, P. Braun-Munzinger, M.K. Köhler, A. Mazeliauskas, K. Redlich, J. Stachel, V. Vislavicius, *The multiple-charm hierarchy in the statistical hadronization model*, **JHEP** 07 (2021) 035, arXiv:2104.12754, [https://doi.org/10.1007/JHEP07\(2021\)035](https://doi.org/10.1007/JHEP07(2021)035)
11. A. Kurkela, A. Mazeliauskas, R. Törnkvist, *Collective flow in single-hit QCD kinetic theory*, **JHEP** 11 (2021) 216, arXiv:2104.08179, [https://doi.org/10.1007/JHEP11\(2021\)216](https://doi.org/10.1007/JHEP11(2021)216)
12. J. Brewer, A. Mazeliauskas, W. van der Schee, *Opportunities of OO and pO collisions at the LHC*, arXiv:2103.01939

2020

13. A. Huss, A. Kurkela, A. Mazeliauskas, R. Paatelainen, W. van der Schee, U. Wiedemann, *Predicting parton energy loss in small collision systems*, **Phys.Rev.C** 103 054903 (2021) arXiv:2007.13758, <https://doi.org/10.1103/PhysRevC.103.054903>
14. A. Huss, A. Kurkela, A. Mazeliauskas, R. Paatelainen, W. van der Schee, U. Wiedemann, *Discovering partonic rescattering in light nucleus collisions*, **Phys.Rev.Lett.** 126 192301 (2021), arXiv:2007.13754, <https://doi.org/10.1103/PhysRevLett.126.192301>

15. J. Berges, M.P. Heller, [A. Mazeliauskas](#), R. Venugopalan, *QCD thermalization: Ab initio approaches and interdisciplinary connections*, **Rev.Mod.Phys.** 93 (2021) 3 035003 arXiv:2005.12299, <https://doi.org/10.1103/RevModPhys.93.035003>
16. EDITOR FOR J. Adolfsson et al., *QCD Challenges from pp to A-A Collisions*, community report, **Eur.Phys.J.A** 56, 11 (2020), arXiv:2003.10997
17. EDITOR FOR M. Bluhm et al., *Dynamics of critical fluctuations: Theory – phenomenology – heavy-ion collisions*, community report, **Nucl. Phys. A** 1003, 122016 (2002), arXiv:2001.08831

2019

18. O. Garcia-Montero, N. Löhner, [A. Mazeliauskas](#), J. Berges, and K. Reygers, *Probing the evolution of heavy-ion collisions using direct photon interferometry*, **Phys. Rev. C** 102, 024915 (2020), arXiv:1909.12246, <https://doi.org/10.1103/PhysRevC.102.024915>
19. D. Devetak, A. Dubla, S. Floerchinger, E. Grossi, [A. Mazeliauskas](#), S. Masciocchi, and I. Selyuzhenkov, *Global fluid fits to identified particle transverse momentum spectra from heavy-ion collisions at the Large Hadron Collider*, **JHEP** 2006 (2020) 44 arXiv:1909.10485, [https://doi.org/10.1007/JHEP06\(2020\)044](https://doi.org/10.1007/JHEP06(2020)044)
20. P. Hanus, [A. Mazeliauskas](#), and K. Reygers, *Entropy production in pp and Pb-Pb collisions at energies available at the CERN Large Hadron Collider*, **Phys. Rev. C** 100, 064903 (2019), arXiv:1908.02792, <https://doi.org/10.1103/PhysRevC.100.064903>
21. G. Giacalone, [A. Mazeliauskas](#) and S. Schlichting, *Hydrodynamic Attractors, Initial State Energy, and Particle Production in Relativistic Nuclear Collisions*, **Phys. Rev. Lett.** 123, 262301 (2019), arXiv:1908.02866, <https://doi.org/10.1103/PhysRevLett.123.262301>
22. [A. Mazeliauskas](#) and V. Vslavicius, *Temperature and fluid velocity on the freeze-out surface from π , K , p spectra in pp, p-Pb and Pb-Pb collisions*, **Phys. Rev. C** 101, 014910 (2020), arXiv:1907.11059, <https://doi.org/10.1103/PhysRevC.101.014910>
23. W. Florkowski, A. Kumar, R. Ryblewski, and [A. Mazeliauskas](#), *Longitudinal spin polarization in a thermal model*, **Phys. Rev. C** 100, 054907 (2019), arXiv:1904.00002, <https://doi.org/10.1103/PhysRevC.100.054907>

2018

24. A. Kurkela, [A. Mazeliauskas](#), *Chemical equilibration in weakly coupled QCD*, **Phys. Rev. D** 99, 054018 (2019), EDITORS' SUGGESTION, arXiv:1811.03068, <https://doi.org/10.1103/PhysRevD.99.054018>
25. A. Kurkela, [A. Mazeliauskas](#), *Chemical equilibration in hadronic collisions*, **Phys. Rev. Lett.** 122, 142301 (2019), arXiv:1811.03040, <https://doi.org/10.1103/PhysRevLett.122.142301>
26. [A. Mazeliauskas](#), J. Berges, *Prescaling and far-from-equilibrium hydrodynamics in the quark-gluon plasma*, **Phys. Rev. Lett.** 122, 122301 (2019), arXiv:1810.10554, <https://doi.org/10.1103/PhysRevLett.122.122301>
27. [A. Mazeliauskas](#), S. Floerchinger, E. Grossi, D. Teaney, *Fast resonance decays in nuclear collisions*, **Eur. Phys. J. C** (2019), arXiv:1809.11049, <https://doi.org/10.1140/epjc/s10052-019-6791-7>
28. A. Kurkela, [A. Mazeliauskas](#), J.-F. Paquet, S. Schlichting and D. Teaney, *Matching the non-equilibrium initial stage of heavy ion collisions to hydrodynamics with QCD kinetic theory*, **Phys. Rev. Lett.** 122, 122302 (2019), EDITORS' SUGGESTION, arXiv:1805.01604, <https://doi.org/10.1103/PhysRevLett.122.122302>

29. A. Kurkela, [A. Mazeliauskas](#), J.-F. Paquet, S. Schlichting and D. Teaney, *Effective kinetic description of event-by-event pre-equilibrium dynamics in high-energy heavy-ion collisions*, **Phys. Rev. C**, **99**, 034910 (2019), arXiv:1805.00961, <https://doi.org/10.1103/PhysRevC.99.034910>

pre-2018

30. Y. Akamatsu, [A. Mazeliauskas](#) and D. Teaney, *Bulk viscosity from hydrodynamic fluctuations with relativistic hydro-kinetic theory*, **Phys. Rev. C** **97**, 024902 (2018), arXiv:1708.05657, <https://doi.org/10.1103/PhysRevC.97.024902>,
31. Y. Akamatsu, [A. Mazeliauskas](#) and D. Teaney, *A kinetic regime of hydrodynamic fluctuations and long time tails for a Bjorken expansion*, **Phys. Rev. C**, **95**, 014909 (2017), arXiv:1606.07742 <https://doi.org/10.1103/PhysRevC.95.014909>
32. L. Keegan, A. Kurkela, [A. Mazeliauskas](#) and D. Teaney, *Initial condition for hydrodynamics from weakly coupled pre-equilibrium evolution*, **JHEP** **1608** (2016) 171, arXiv:1605.04287, [https://doi.org/10.1007/JHEP08\(2016\)171](https://doi.org/10.1007/JHEP08(2016)171)
33. [A. Mazeliauskas](#) and D. Teaney, *Fluctuations of harmonic and radial flow in heavy ion collisions with principal components*, **Phys. Rev. C** **93**, 024913 (2016), arXiv:1509.07492, <https://doi.org/10.1103/PhysRevC.93.024913>
34. [A. Mazeliauskas](#) and D. Teaney, *Subleading harmonic flows in hydrodynamic simulations of heavy ion collisions*, **Phys. Rev. C** **91**, 044902 (2015), arXiv:1501.03138, <https://doi.org/10.1103/PhysRevC.91.044902>

Selected Conference proceedings

1. [A. Mazeliauskas](#), **Quark Matter 2018** *Initial conditions for nuclear collisions: theory overview*, Nucl. Phys. A **982** (2019), 134-141, arXiv:1807.05586