

# Aleksas Mazeliauskas

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## Education

- 2012-2017 **Stony Brook University**, United States, PhD in Physics  
Nuclear Theory Group, advisor Prof Derek Teaney, outstanding theoretical thesis
  - 2011-2012 **University of Cambridge**, United Kingdom, Master of Mathematics (Part III)  
Advanced courses in theoretical physics, graduated with distinction
  - 2008-2011 **University of Cambridge**, United Kingdom, BA (Hons) Mathematics (Tripos)  
1st class degree
  - 2007-2008 **Vilnius University**, Faculty of Physics, Lithuania; first year course in physics
  - 1999-2007 **Mažeikių Gabijos gimnazija**, secondary school, graduated with distinction
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## Research experience

- Heidelberg**  
2017-2019 **Postdoctoral researcher** at the Institute for Theoretical Physics, Heidelberg University, member of collaborative research center “Isolated quantum systems and universality in extreme conditions”. Active ongoing contributions to projects:
    - o A01: Initial state and thermalisation dynamics in heavy-ion collisions. Prof. Jürgen Berges, Prof. Klaus Reygers, and Prof. Johanna Stachel
    - o C05: Flow and fluctuations in relativistic heavy ion collisions. Priv.-Doz. Dr. Stefan Flörchinger and Priv.-Doz. Dr. Silvia MasciocchiWork on universal early times dynamics of heavy ion collisions using QCD kinetic theory. Study of propagation of fluctuations in pre-equilibrium (with kinetic propagator  $K\text{ØMP}\text{ØST}$ ), hydrodynamic and hadronic stages.
  - Stony Brook**  
2014-2017 *Fluctuations in ultra-relativistic heavy ion collisions*—PhD dissertation work under supervision of Prof Derek Teaney, Nuclear Theory Group.
    - o Early stages of heavy ion collisions with effective kinetic theory equilibration
    - o Nonlinear thermal noise corrections to heavy ion expansion
    - o Subleading harmonic flows and factorization breaking with principal components
    - o 3D viscous relativistic hydrodynamic code for heavy ion collisions
  - Stony Brook**  
2013-2014 Analyzed temperature dependent corrections to anomalous transport coefficients. With Prof D. Kharzeev and Dr T. Kalaydzhyan, Nuclear Theory Group.
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## Teaching and mentoring experience

- 2018 **Co-supervisor** of a bachelor student (Paul Wiesemeyer) project on radiative photon production in QGP (summer semester).
- 2018 **Co-organiser** of a master level student lead seminar on QCD matter in heavy ion collisions (summer semester).

- 2017-2018 **Head tutor** for the first semester Quantum Field Theory course. Responsible for preparing homework and exam problems and overseeing other nine tutors.
- 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), named outstanding Teaching Assistant.

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## Science outreach

- 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 – additional training school for gifted youth in Lithuania
- one of 9 group leaders during residential NMA session 2011; responsibility of organising and running a two week long session of lectures and other activities for 100 schoolchildren
  - spoke twice on Lithuanian national TV about education of talented children

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## Awards

- 2017 Max Dresden Prize for outstanding theoretical thesis
- 2016 APS FGSA Travel Award for Excellence in Graduate Research
- 2013 David Fox award for the outstanding Teaching Assistant
- 2009-2011 Master's Sizarship for outstanding achievement by undergraduate member of College, T W Armour Prize for outstanding performance in University examination in Mathematics, John Cartwright (1674) scholarship, Misys Charitable Foundation award for good academic progress, Drury-Johns Mathematical Prize,
- 2006-2007 Honourable mention in International Physics Olympiad, Iran, Vilnius International Rotary Club scholarship, Honourable mention in International Physics Olympiad, Singapore

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## Languages

<b>Lithuanian</b>	native, enthusiastic teacher	<b>German</b>	intermediate
<b>English</b>	fluent, higher education in English	<b>Russian</b>	basic conversational
<b>Chinese</b>	beginner, passed HSK level II test		

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## 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<sup>A</sup>T<sub>E</sub>X (word processing), Inkscape (vector graphics), GNU/Linux (operating system), Gnuplot (graphing), HTML5 (web building)

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## Publications

1. A. Kurkela, **A. Mazeliauskas**, *Chemical equilibration in weakly coupled QCD*, Phys. Rev. D 99, 054018 (2019), EDITORS' SUGGESTION
2. A. Kurkela, **A. Mazeliauskas**, *Chemical equilibration in hadronic collisions*, Phys. Rev. Lett. 122, 142301 (2019)

3. **A. Mazeliauskas**, J. Berges, *Prescaling and far-from-equilibrium hydrodynamics in the quark-gluon plasma*, Phys. Rev. Lett. 122, 122301 (2019)
4. **A. Mazeliauskas**, S. Floerchinger, E. Grossi, D. Teaney, *Fast resonance decays in nuclear collisions*, Eur. Phys. J. C (2019) xx: xxx
5. 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
6. 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)
7. Y. Akamatsu, **A. Mazeliauskas** and D. Teaney, *Bulk viscosity from hydrodynamic fluctuations with relativistic hydro-kinetic theory*, Phys. Rev. C 97, 024902 (2018)
8. 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)
9. **A. Mazeliauskas** and D. Teaney, *Fluctuations of harmonic and radial flow in heavy ion collisions with principal components*, Phys. Rev. C 93, 024913 (2016)
10. L. Keegan, A. Kurkela, **A. Mazeliauskas** and D. Teaney, *Initial condition for hydrodynamics from weakly coupled pre-equilibrium evolution*, JHEP 1608 (2016) 171
11. **A. Mazeliauskas** and D. Teaney, *Subleading harmonic flows in hydrodynamic simulations of heavy ion collisions*, Phys. Rev. C 91, 044902 (2015)

#### In preparation

P. Hanus, K. Reygers and **A. Mazeliauskas**, *Entropy production in pp and Pb–Pb collisions at the LHC*

**A. Mazeliauskas** and V. Vislavicius, *Freeze-out surface from identified particle spectra in Pb-Pb and p-p collisions*

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### Invited presentations

- 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

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### Contributed presentations

- 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