

# Adam Takacs

Heidelberg, Germany  
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🌐 <https://adam-takacs.github.io/>



## Employment

2023  
**Postdoc**, *University of Heidelberg*, Germany  
Topic: jet thermalization, non-equilibrium QCD, small-system quenching  
Emmy Noether group of Aleksas Mazeliauskas

## Education

2019  
2023  
**PhD. in physics**, *University of Bergen*, Norway  
Topic: high-energy nuclear and particle physics, theory and phenomenology of jets.  
Supervisor: Konrad Tywoniuk

2016  
2019  
**MSc. in physics**, *excellent, Eotvos University*, Budapest, Hungary  
Specialization in high-energy nuclear and particle physics, statistical physics.  
Supervisor: Gergely Gábor Barnaföldi

## Research experience

2024  
**Short visit at CERN-TH**, Switzerland

2022  
**Short visit at CERN-TH**, Switzerland

2020  
2021  
**MSCA short term researcher of MCNet at Lund University**, Sweden  
Hosts: Leif Lönnblad, collaborators: Stefan Prestel and Korinna Zapp, duration 4 months.  
Topics: parton shower development in pp and AA.

2020  
**Visiting researcher at Paris-Saclay University**, France  
Hosts: Gregory Soyez, duration 4 weeks.  
Topics: NLL resummation, quark-gluon classification, machine learning

2020  
**GGI frontiers in nuclear and hadronic physics PhD school**, Florence, Italy  
Topics: heavy-quark EFT, lattice QCD, CGC, duration 2 weeks.

2019  
**ECT\* effective field theory techniques PhD school**, Trento, Italy  
Topics: IR structure of gauge theories, NRQFT, and SCET, duration 3 weeks.

2018  
**Visiting researcher at Stony Brook University**, US  
Hosts: Gabor David and Ismail Zahed, duration 5 weeks.  
Topics: direct photons in heavy-ion collisions, hydrodynamics at finite chemical potential

2017  
2019  
**Member of the GALNUC ERC group**, Budapest, Hungary  
Collaborator: Bence Kocsis.  
Topic: statistical physics of long range interaction and of non-additive systems

2016  
**Summer student at GSI-theory**, Darmstadt, Germany  
Host: Bengt Friman, duration 2 months.  
Topic: QGP at finite chemical potential with random matrices, criticality in phase transition

2016  
2019  
**Undergraduate researcher at Wigner Research Center**, Budapest, Hungary  
Supervisors: G.G. Barnaföldi, T.S. Biró, and D. Molnar (Purdue), duration 4 years.  
Topic: Fragmentation function parametrization, non-equilibrium freeze out

## Awards

- Most Valuable Participant, Hot Quarks Conference 2022
- Best Student Diploma, Zimanyi Conference 2020
- H2020/Marie Skłodowska-Curie Actions: MCNet Short-term studentship 2020-21
- Early-career researcher representative of European Committee for Future Accelerators 2020
- Winner of the Hungarian National Excellence Program 2018-19 (2200 €)
- Science Popularization Paper Award, Hungarian Academy of Sciences 2018
- Most Excellent Student of the Faculty, Eotvos University 2018
- Winner of the Hungarian National Excellence Program 2017-18 (4300 €)
- Scholar of Google Talent Camp 2017
- 30 Under 30 - Forbes Hungary 2017
- II. place at Sci-ndicator Hungarian National Science Popularization Competition 2017
- Winner of the Hungarian National Excellence Program 2016-17 (4300 €)
- II. place at Scientific Students' Associations Competition, Eotvos University 2016

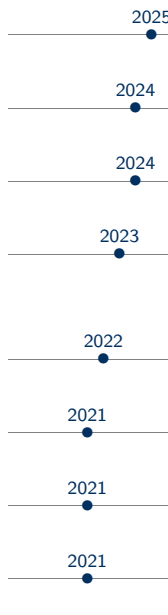
## Teaching experience

- Quantum field theory 1 – teaching assistant (Fall 2024), Heidelberg University
- Theoretical Statistical Physics – teaching assistant (Spring 2024), Heidelberg University
- Statistical Physics and Thermodynamics – teaching assistant (Spring 2020), University of Bergen

## Refereeing

- Journal of High Energy Physics (JHEP)
- Physical Review D (PRD)
- European Physical Journal C (EPJC)

## Publication list

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- A vertical timeline on the left side of the publication list, with horizontal lines and dots marking the years 2021, 2021, 2021, 2022, 2023, 2024, 2024, and 2025. The years are written in blue text next to the dots.
- 2025 A. Falcao and A. Takacs *High-Dimensional Unfolding in Large Backgrounds*, ArXiv:2507.06291 [hep-ph]
  - 2024 J. Gebhard, A. Mazeliauskas, A. Takacs *No-quenching baseline for energy loss signals in oxygen-oxygen collisions*, ArXiv:2410.22405 [hep-ph]
  - 2024 J. Altmann et al. *QCD challenges from pp to AA collisions: 4th edition*, Eur.Phys.J.C 84 (2024) 4, 421, ArXiv:2401.09930 [hep-ph]
  - 2023 L. Cunqueiro, D. Pablos, A. Soto-Ontoso, M. Spousta, A. Takacs, M. Verweij, *Isolating perturbative QCD splittings in heavy-ion collisions*, Phys.Rev.D 110 (2024) 1, 014015, ArXiv:2311.07643 [hep-ph]
  - 2022 J. H. Isaksen, A. Takacs, K. Tywoniuk, *A unified picture of medium-induced radiation*, JHEP 02 (2023) 156, ArXiv:2206.02811 [hep-ph]
  - 2021 F. Dreyer, G. Soyez, A. Takacs, *Quarks and gluons in the Lund plane*, JHEP 08 (2022) 177, ArXiv:2112.09140 [hep-ph]
  - 2021 P. Caucal, A. Soto-Ontoso, A. Takacs, *Dynamically Groomed jet radius in heavy-ion collisions*, ArXiv:2111.14768 [hep-ph], Phys. Rev. D **105** (2022) 114046
  - 2021 A. Takacs and K. Tywoniuk, *Quenching effects in the cumulative jet spectrum*, ArXiv:2103.14676 [hep-ph], JHEP 10 (2021) 038

2021	P. Caucal, A. Soto-Ontoso, A. Takacs, <i>Dynamical grooming meets LHC data</i> , ArXiv:2103.06566 [hep-ph], JHEP 07 (2021) 020
2020	A. Takacs, D. Pablos and K. Tywoniuk, <i>Resolving the spacetime structure of jets with medium</i> , ArXiv:2009.02936 [hep-ph], PoS HardProbes2020 (2021) 161
2020	A. Takacs et al, <i>Report on the ECFA early-career researchers debate on the 2020 european strategy update for particle physics</i> , ArXiv:2002.02837 [hep-ex]
2019	A. Takacs and D. Molnar, <i>Suppression of elliptic flow without viscosity</i> , ArXiv:1906.12311 [nucl-th]
2019	A. Takacs, G. G. Barnaföldi, <i>Alternative parton fragmentation functions</i> , ArXiv:1811.01974 [hep-ph], Proceedings <b>10</b> , 12 (2019)
2018	A. Takacs, P. D. Ispanovity, G. Tichy <i>Strain distribution in polycrystals: theory and application for diffraction experiments</i> arXiv:1812.02247 [cond-mat]
2018	A. Takacs and B. Kocsis, <i>Isotropic-nematic phase transitions in gravitational systems II: higher order multipoles</i> , ArXiv:1712.04449 [astro-ph], Astrophys.J. <b>856</b> , no. 2, 113 (2018)
2017	G. Bíró, G. G. Barnaföldi, T. S. Biró, K. Ürmösy and A. Takacs, <i>Systematic analysis of the statistical approach in high energy particle collisions - experiment vs. theory</i> , ArXiv:1702.0842 [hep-ph], Entropy <b>19</b> , 88 (2017)

## List of talks

2025	<i>Jet Elliptic Anisotropy and Suppression in PbPb, AuAu and OO</i> , <b>invited</b> speaker at the High energy probes of the initial stages, Frankfurt, Germany
2025	<i>Jets with preequilibrium quenching</i> , <b>invited</b> speaker at the High energy probes of the initial stages, CERN, Switzerland
2024	<i>Introduction to LHC physics</i> , <b>plenary</b> speaker at the Triggering Discoveries in High Energy Physics III, High Tatras, Slovakia
2024	<i>Quenched jets beyond leading accuracy</i> , <b>seminar</b> at the University of Oxford, UK
2024	<i>Baseline calculations for oxygen and neon isotopes</i> , <b>invited</b> talk at Light ion collisions at the LHC, CERN, Switzerland
2024	<i>Exploring perturbative QCD splittings in heavy-ion collisions</i> , talk at Hard Probes Nagasaki, Japan
2024	<i>Exploring perturbative QCD splittings in heavy-ion collisions</i> , talk at Hard Probes Nagasaki, Japan
2024	<i>The theory of jet modification and energy loss in the quark-gluon plasma</i> , <b>invited</b> talk at Quark Confinement, Cairns, Australia
2024	<i>Exploring perturbative QCD splittings in heavy-ion collisions</i> , <b>seminar</b> at TH Heavy Ion Coffee at CERN, Switzerland
2023	<i>Exploring perturbative QCD splittings in heavy-ion collisions</i> , <b>invited</b> talk at INT Probing QCD at High Energy and Density with Jets workshop in Seattle, US
2023	<i>Exploring perturbative QCD splittings in heavy-ion collisions</i> , talk at Quark Matter 2023, Houston US
2023	<i>Jets in hot nuclear matter</i> , <b>invited</b> talk at ISMD 2023 Gyongyos, Hungary
2023	<i>A unified picture of medium-induced radiation</i> , talk at Hard Probes 2023, Aschaffenburg, Germany
2023	<i>Color coherence in the weakly coupled picture</i> , <b>invited</b> talk at QCD Challenges in Padova, Italy

2022	<i>Dynamically groomed jet radius in heavy-ion collisions</i> , talk at QCD@LHC 2022 in Orsay, France
2022	<i>A unified picture of medium-induced radiation</i> , talk at Hot Quarks 2022 in Colorado, US
2022	<i>Quenched jets beyond leading accuracy</i> , <b>seminar</b> at CERN TH Heavy-Ion Coffee in Geneva, Switzerland
2022	<i>A unified picture of medium-induced radiation</i> , talk at BOOST 2022 in Hamburg, Germany
2022	<i>Dynamically Groomed jet radius in heavy-ion collisions</i> , <b>invited</b> talk at ISMD 2022 in Pitlochry, Scotland
2022	<i>Quarks and gluons in the Lund plane</i> , talk at ICHEP 2022 in Bologna, Italy
2022	<i>Dynamically Groomed jet radius in heavy-ion collisions</i> , <b>invited</b> talk at Jet Quenching In The Quark-Gluon Plasma at ECT* 2022 in Trento, Italy
2021	<i>Dynamically Groomed jet radius in heavy-ion collisions</i> , talk at Zimanyi School 2021 at Budapest, Hungary
2021	<i>Quenching effects in the jet spectrum at various cone sizes</i> , talk at EPS-HEP Conference
2021	<i>Quenching effects in the cumulative jet spectrum</i> , talk at Norwegian Subatomic Physics Meeting
2021	<i>Dynamical grooming meets LHC data</i> , talk at Parton Showers and Resummation
2021	<i>Quenching effects in the cumulative jet spectrum</i> , <b>seminar</b> at University of Tennessee
2021	<i>Dynamical grooming meets LHC data</i> , talk at 22 <sup>nd</sup> MCnet Meeting
2021	<i>Quenching effects in the cumulative jet spectrum</i> , <b>seminar</b> at Lund University in Lund, Sweden
2020	<i>Quenching effects in the cumulative jet spectrum</i> , talk at Zimanyi School
2020	<i>Resolving the spacetime structure of jets with medium</i> , talk at Hard Probes 2020
2019	<i>Suppression of anisotropic flow without viscosity</i> , talk at IWoC at Koszeg, Hungary
2019	<i>Suppression of anisotropic flow without viscosity</i> , talk at COST Workshop at Lund, Sweden
2019	<i>New parton fragmentation functions</i> , talk at 2 <sup>nd</sup> Jetscape Workshop, Texas, US
2018	<i>Do we need viscosity to suppress <math>v_2</math>?</i> , talk at Zimanyi Workshop Budapest, Hungary
2018	<i>Alternative parton fragmentation functions</i> , <b>seminar</b> at University of Bergen, Norway
2018	<i>New parton fragmentation functions</i> , talk at Hot Quarks at Texel, The Netherlands
2017	<i>Super-statistics with negative binomial multiplicity</i> , talk at Zimanyi Winter School Budapest, Hungary
2017	<i>Alternative fragmentation functions for hadron production in high-energy collisions</i> , talk at QCD@LHC Debrecen, Hungary

## Outreach experience

2019	<i>How quarks build up hadrons?</i> , science popularization talk at UiB Library, Norway.
2019	<i>How quarks build up hadrons?</i> , science popularization article in hungarian in Termeszt Vilaga 150 (2019) 2.
2018	<i>How quarks build up hadrons?</i> , science popularization talk in the European Researcher's Night, Budapest, Hungary.

## Other interests, hobbies

movies, books, YouTube, concerts, sports, climbing, bars

## References

### University of Bergen

**Prof. Konrad Tywoniuk**

Leader of Heavy-Ion Theory Group  
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### Brookhaven National Laboratory

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### Heidelberg University

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### Wigner Research Center for Physics

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