Adam Takacs

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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: theory and phenomenology of jets and jet quenching.
Supervisor: Konrad Tywoniuk

2016–2019 — **MSc. in physics**, *excellent, Eotvos University*, Budapest, Hungary
Specialization in high-energy particle physics and statistical mechanics.
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 oft 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)
- European Physical Journal C (EPJC)

Publication list

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, *Dynamical grooming meets LHC data*, ArXiv:2103.06566 [hep-ph], JHEP 07 (2021) 020

2020 A. Takacs, D. Pablos and K. Tywoniuk, *Resolving the spacetime structure of jets with medium*, ArXiv:2009.02936 [hep-ph], PoS HardProbes2020 (2021) 161

2020 A. Takacs et al, *Report on the ECFA early-career researchers debate on the 2020 european strategy update for particle physics*, ArXiv:2002.02837 [hep-ex]

2019 A. Takacs and D. Molnar, *Suppression of elliptic flow without viscosity*, ArXiv:1906.12311 [nucl-th]

2019 A. Takacs, G. G. Barnaföldi, *Alternative parton fragmentation functions*, ArXiv:1811.01974 [hep-ph], Proceedings **10**, 12 (2019)

2018 A. Takacs, P. D. Ispanovity, G. Tichy *Strain distribution in polycrystals: theory and application for diffraction experiments* arXiv:1812.02247 [cond-mat]

2018 A. Takacs and B. Kocsis, *Isotropic-nematic phase transitions in gravitational systems II: higher order multipoles*, ArXiv:1712.04449 [astro-ph], Astrophys.J. **856**, no. 2, 113 (2018)

2017 G. Bíró, G. G. Barnaföldi, T. S. Biró, K. Ürmössy and A. Takacs, *Systematic analysis of the statistical approach in high energy particle collisions - experiment vs. theory*, ArXiv:1702.0842 [hep-ph], Entropy **19**, 88 (2017)

List of talks

2024 *Exploring perturbative QCD splittings in heavy-ion collisions*, talk at Hard Probes Nagasaki, Japan

2024 *The theory of jet modification and energy loss in the quark-gluon plasma*, **invited** talk at Quark Confinement, Cairns, Australia

2024 *Exploring perturbative QCD splittings in heavy-ion collisions*, **invited seminar** at TH Heavy Ion Coffee at CERN, Switzerland

2023 *Exploring perturbative QCD splittings in heavy-ion collisions*, **invited** talk at INT Probing QCD at High Energy and Density with Jets workshop in Seattle, US

2023 *Exploring perturbative QCD splittings in heavy-ion collisions*, talk at Quark Matter 2023, Houston US

2023 *Jets in hot nuclear matter*, **invited** talk at ISMD 2023 Gyongyos, Hungary

2023 *A unified picture of medium-induced radiation*, talk at Hard Probes 2023, Aschaffenburg, Germmanny

2023 *Color coherence in the weakly coupled picture*, **invited** talk at QCD Challenges in Padova, Italy

2022 *Dynamically groomed jet radius in heavy-ion collisions*, talk at QCD@LHC 2022 in Orsay, France

2022 *A unified picture of medium-induced radiation*, talk at Hot Quarks 2022 in Colorado, US

2022 *Quenched jets beyond leading accuracy*, **invited seminar** at CERN TH Heavy-Ion Coffee in Geneva, Switzerland

2022 *A unified picture of medium-induced radiation*, talk at BOOST 2022 in Hamburg, Germany

2022 *Dynamically Groomed jet radius in heavy-ion collisions*, **invited** talk at ISMD 2022 in Pitlochry, Scotland

2022 *Quarks and gluons in the Lund plane*, talk at ICHEP 2022 in Bologna, Italy

2022 *Dynamically Groomed jet radius in heavy-ion collisions*, **invited** talk at Jet Quenching In The Quark-Gluon Plasma at ECT* 2022 in Trento, Italy

2021 *Dynamically Groomed jet radius in heavy-ion collisions*, talk at Zimanyi School 2021 at Budapest, Hungary

2021 *Quenching effects in the jet spectrum at various cone sizes*, talk at EPS-HEP Conference

2021 *Quenching effects in the cumulative jet spectrum*, talk at Norwegian Subatomic Physics Meeting

2021 *Dynamical grooming meets LHC data*, talk at Parton Showers and Resummation

2021 *Quenching effects in the cumulative jet spectrum*, **invited seminar** at University of Tennessee

2021 *Dynamical grooming meets LHC data*, talk at 22^{nd} MCnet Meeting

2021 *Quenching effects in the cumulative jet spectrum*, **invited seminar** at Lund University in Lund, Sweden

2020 *Quenching effects in the cumulative jet spectrum*, talk at Zimanyi School

2020 *Resolving the spacetime structure of jets with medium*, talk at Hard Probes 2020

2019 *Suppression of anisotropic flow without viscosity*, talk at IWoC at Koszeg, Hungary

2019 *Suppression of anisotropic flow without viscosity*, talk at COST Workshop at Lund, Sweden

2019 *New parton fragmentation functions*, talk at 2^{nd} Jetscape Workshop, Texas, US

2018 *Do we need viscosity to suppress v_2?*, talk at Zimanyi Workshop Budapest, Hungary

2018 *Alternative parton fragmentation functions*, invited seminar at University of Bergen, Norway

2018 *New parton fragmentation functions*, talk at Hot Quarks at Texel, The Netherlands

2017 *Super-statistics with negative binomial multiplicity*, talk at Zimanyi Winter School Budapest, Hungary

2017 *Alternative fragmentation functions for hadron production in high-energy collisions*, talk at QCD@LHC Debrecen, Hungary

Outreach experience

2019 *How quarks build up hadrons?*, science popularization talk at UiB Library, Norway.

2019 *How quarks build up hadrons?*, science popularization article in hungarian in Termeszet Vilaga 150 (2019) 2.

2018 *How quarks build up hadrons?*, science popularization talk in the European Researcher's Night, Budapest, Hungary.

2017 *Connecting hadron spectra and statistical mechanics*, dissemination talk at Hungarian Academic of Science, Budapest, Hungary.

Other interests, hobbies

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

References

University of Bergen

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