Ágnes Mester

Email: agnes.mester@ubbcluj.ro
Date of birth: September 25, 1993 **Location**: Cluj-Napoca, Romania

[Updated: October 2023]

Education

Ph.D. in Mathematics — Budapest, Hungary
Óbuda University — August 31, 2017 – April 21, 2023
Doctoral School of Applied Informatics and Applied Mathematics
Thesis: ***Functional inequalities on Riemann-Finsler manifolds***
Supervisor: Alexandru Kristály, Ph.D.

M.Sc. in Advanced Mathematics — Cluj-Napoca, Romania
Babeş-Bolyai University — 2015 – 2017
Faculty of Mathematics and Computer Science

B.Sc. in Mathematics and Computer Science — Cluj-Napoca, Romania
Babeş-Bolyai University — 2012 – 2015
Faculty of Mathematics and Computer Science

Work experience

Assistant Lecturer — Cluj-Napoca, Romania
Babeș-Bolyai University — February 22, 2021 – present
Faculty of Mathematics and Computer Science

- **Didactical activities**: seminars/laboratories in Analysis II, Partial Differential Equations, Functional Analysis, Artificial Intelligence and Astronomy.
- **Research**: Geometric Analysis, Riemann-Finsler Geometry, Calculus of Variations and Elliptic PDEs, Machine Learning.

Research Assistant — Győr, Hungary
Széchenyi István University — October 1 2020 – March 31, 2021
Department of Mathematics and Computer Science

- **Research project**: Optimizing train re-scheduling with reinforcement learning

Teaching Associate — Cluj-Napoca, Romania
Babeș-Bolyai University — 2017 – 2021
Faculty of Mathematics and Computer Science

Working Student — Cluj-Napoca, Romania
Robert Bosch GmbH — 2015 – 2016

- Domain of interest: Computer Vision
- Individual project: development of driver assistance system using mono-camera

Publications

[1] Á. Mester and K. Szilák. A Dirichlet inclusion problem on Finsler manifolds, *2023 IEEE 23rd International Symposium on Computational Intelligence and Informatics (CINTI)*, accepted, 2023.

[2] A. Kristály, Á. Mester and I. I. Mezei. Sharp Morrey-Sobolev inequalities and eigenvalue problems on Riemannian-Finsler manifolds with nonnegative Ricci curvature, *Commun. Contemp. Math. Online Ready*, 2022. DOI: 10.1142/S0219199722500638.

[3] A. Kopacz, Á. Mester, S. Kolumbán and L. Csató. Standardized feature extraction from pairwise conflicts applied to the train rescheduling problem. *2022 IEEE 20th Jubilee World Symposium on Applied Machine Intelligence and Informatics (SAMI)*, pages 103–108, 2022. DOI: 10.1109/SAMI54271.2022.9780701.

[4] C. Farkas, A. Kristály and Á. Mester. Compact Sobolev embeddings on non-compact manifolds via orbit expansions of isometry groups. *Calculus of Variations and PDE* 60, Article no: 128, 2021. DOI: 10.1007/s00526-021-01997-5.

[5] Á. Mester and A. Kristály. Three isometrically equivalent models of the Finsler-Poincaré disk. *2021 IEEE 15th International Symposium on Applied Computational Intelligence and Informatics (SACI)*, pages 403–408, 2021. DOI: 10.1109/SACI51354.2021.9465545.

[6] Á. Mester, I. R. Peter and C. Varga. Sufficient criteria for obtaining Hardy inequalities on Finsler manifolds. *Mediterranean Journal of Mathematics* 18, Article no: 76, 2021. DOI: 10.1007/s00009-021-01725-5.

[7] Á. Mester and A. Kristály. A bipolar Hardy inequality on Finsler manifolds. *2019 IEEE 13th International Symposium on Applied Computational Intelligence and Informatics (SACI)*, pages 308–313, 2019. DOI: 10.1109/SACI46893.2019.9111497.

[8] Z. Gábos and Á. Mester. Lines in the three-dimensional Bolyai-Lobachevskian hyperbolic geometry. *Studia Universitatis Babeș-Bolyai Mathematica*, 60 (4), pages 583–595, 2015.

[9] Z. Gábos and Á. Mester. Curves with constant geodesic curvature in the Bolyai-Lobachevskian plane. *Studia Universitatis Babeș-Bolyai Mathematica*, 60 (3), pages 449–462, 2015.

Grants

Study of concavity phenomena via optimal transport 2022-2023

- Project number: ÚNKP-22-4
- Funder: New National Excellence Program of the Ministry for Culture and Innovation from the source of the National Research, Development and Innovation Fund
- Host institution: Óbuda University, Budapest, Hungary
- Advisor: Alexandru Kristály, Ph.D.

Functional inequalities and elliptic PDEs: the influence of curvature, 2018-2022

- Project number: 127926
- Funder: National Research, Development and Innovation Fund of Hungary
- Host institution: Óbuda University, Budapest, Hungary
- Role within the project: young researcher (Ph.D. student)
- Project leader: Alexandru Kristály, Ph.D.

Optimizing train re-scheduling with reinforcement learning 2020 – 2021

- Project number: EFOP-3.6.2-16-2017-00015
- Funder: Hungarian Service Network for Mathematics in Industry and Innovations (HU-MATHS-IN)
- Host institution: Széchenyi István University, Győr, Hungary
- Role within the project: research assistant (Ph.D. student)
- Project leader: Sándor Kolumbán, Ph.D.
- https://hu-maths-in.hu/2021/03/16/a-smart-way-to-avoid-train-delays/

Conferences

20th EUROpt Workshop on Advances in Continuous Optimization
Budapest, Hungary, 23-25. August 2023.
Presented: *Sharp Sobolev inequalities on Finsler manifolds with nonnegative Ricci curvature.*

Eastern European Machine Learning Summer School (EEML 2021)
Virtual Budapest, Hungary, 7-15. July 2021.
Best poster award: A. Kopacz, *Á. Mester*, S. Kolumbán and L. Csató. *Optimizing train rescheduling with reinforcement learning.*

2021 IEEE 15th International Symposium on Applied Computational Intelligence and Informatics (SACI)
Budapest, Hungary (online conference), 19-21. May 2021.
Presented paper: *Á. Mester* and A. Kristály. *Three isometrically equivalent models of the Finsler-Poincaré disk.*

International Conference on Fluids and Variational Methods
Rényi Institute, Budapest, Hungary, 10-14. June 2019.

2019 IEEE 13th International Symposium on Applied Computational Intelligence and Informatics (SACI)
Timișoara, Romania, 29-31. May 2019.
Presented paper: *Á. Mester* and A. Kristály. *A bipolar Hardy inequality on Finsler manifolds.*

Toulouse Winter School on Calculus of Variations
Toulouse, France, 11-22. February 2019.

Workshop for Young Researchers in Mathematics
Bucharest, Romania, 17-18. May 2018.
Presented: *Multipolar Hardy inequality on Finsler manifolds.*

Atelier de travail en Equations aux Dérivées Partielles
Bucharest, Romania, 7-8. December 2017.
Presented: *Hardy inequalities on Finsler manifolds.*

Language skills
Hungarian: Mother tongue
English: fluent (Cambridge ESOL Certificate in Advanced English - CAE, Level C2)
Romanian: fluent

Programming skills
Python, Programming Basics (C, C++), MATLAB, Maple, Wolfram Mathematica