Ágnes Mester

Email: agnes.mester@ubbcluj.ro

Education		
	Ph.D. in Mathematics	Budapest, Hungary
	Óbuda University	September 1, 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

Psycho-pedagogical module, level 1 Cluj-Napoca, Romania
Babeş-Bolyai University 2012 – 2015
Faculty of Psychology and Educational Sciences

Work experience

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

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

Research Associate Budapest, Hungary
Óbuda University September 1 2022 – September 30, 2023
John von Neumann Faculty of Informatics

– **Research project**: Study of concavity phenomena via optimal transport

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
Babeş-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

Selected
Publications

[1] Á. Mester. *Talenti's Comparison Theorem on Finsler Manifolds with Nonnegative Ricci Curvature.* Acta Universitatis Sapientiae – Mathematica **16** (2024), no. 1, 1-22. *In press.*

[2] Á. Mester and K. Szilák. *A Dirichlet inclusion problem on Finsler manifolds.* 2023 IEEE 23rd International Symposium on Computational Intelligence and Informatics (CINTI). Budapest, Hungary, 2023, 99-104. DOI: 10.1109/CINTI59972.2023.10381972.

[3] A. Kristály, Á. Mester and I.-I. Mezei. *Sharp Morrey-Sobolev inequalities and eigenvalue problems on Riemannian-Finsler manifolds with nonnegative Ricci curvature.* Communications in Contemporary Mathematics **25** (2023), no. 10, Paper no: 2250063. DOI: 10.1142/S0219199722500638.

[4] 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). Poprad, Slovakia, 2022, 103–108. DOI: 10.1109/SAMI54271.2022.9780701.

[5] 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** (2021), Article no: 128. DOI: 10.1007/s00526-021-01997-5.

[6] 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). Timișoara, Romania, 2021, 403–408. DOI: 10.1109/SACI51354.2021.9465545.

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

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

[9] Z. Gábos and Á. Mester. *Lines in the three-dimensional Bolyai-Lobachevskian hyperbolic geometry.* Studia Universitatis Babeș-Bolyai Mathematica **60** (2015), no. 4, 583–595.

[10] Z. Gábos and Á. Mester. *Curves with constant geodesic curvature in the Bolyai-Lobachevskian plane.* Studia Universitatis Babeș-Bolyai Mathematica **60** (2015), no. 3, 449–462.

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.
- Publication:

[2] Á. Mester and K. Szilák. *A Dirichlet inclusion problem on Finsler manifolds.* 2023 IEEE 23rd International Symposium on Computational Intelligence and Informatics (CINTI). Budapest, Hungary, 2023, 99-104. DOI: 10.1109/CINTI59972.2023.10381972.

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.
- Publications:

[3] A. Kristály, Á. Mester and I.-I. Mezei. *Sharp Morrey-Sobolev inequalities and eigenvalue problems on Riemannian-Finsler manifolds with nonnegative Ricci curvature.* Communications in Contemporary Mathematics **25** (2023), no. 10, Paper no: 2250063. DOI: 10.1142/S0219199722500638.

[5] 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** (2021), Article no: 128. DOI: 10.1007/s00526-021-01997-5.

[6] 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). Timișoara, Romania, 2021, 403–408. DOI: 10.1109/SACI51354.2021.9465545.

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

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

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/
- Publication:

[4] 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). Poprad, Slovakia, 2022, 103–108. DOI: 10.1109/SAMI54271.2022.9780701.

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