Roland Púček

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PROFESSIONAL APPOINTMENTS

2021 - present Research Fellow, Institute of Mathematics, University of Jena
Group leader: Prof. Hendrik Süß

EDUCATION

2021 PhD, Department of Mathematical Sciences, University of Bath
Thesis title: Extremal Kähler metrics and separable toric geometries
Supervisor: Prof. David M.J. Calderbank

2016 Mgr., Faculty of Mathematics and Physics, Charles University
Major: Mathematical Analysis
Thesis title: Application of invariant operators in real parabolic geometries
Supervisor: Prof. RNDr. Vladimír Souček, DrSc.

2014 Bc., Faculty of Mathematics and Physics, Comenius University
Thesis title: Some properties of smooth manifolds
Supervisor: Prof. RNDr. Július Korbaš, CSc.

PUBLICATIONS

2023 M. Torda, J. Y. Goulermas, R. Púček and V. Kurlin, Entropic trust region for densest crystallographic symmetry group packings, *SIAM Journal on Scientific Computing*, 45(4), B493–B522.

2017 R. Púček, Almost c-spinorial geometry, *Arch. Math. (Brno)*, 53(5):325-334, 2017

Manuscripts in review

2023 R. Púček, Factorization structures, cones, and polytopes, arXiv preprint arXiv:2311.07328, 2023

Manuscripts in Preparation

2024 R. Púček, Separable geometries and extremal metrics,
Target venue: Journal of Differential Geometry

2024 R. Púček, M. Torda, Integral formulae for solutions of ultrahyperbolic equations and Leray residue

2024 M. Brandenburg, R. Púček, Geometry of compatible polytopes

MEMBERSHIP

2023 - 2026 member of two working groups, *Cartan Geometry and Representation Theory*, and *Integrable Systems and Supersymmetry* in the COST Action CaLISTA

SECURED FUNDING

2024 CaLISTA Short-Term Scientific Mission
Title: Integral formulae for solutions of PDEs with constant coefficients and their integrability
Amount: €2000

2023 CaLISTA Short-Term Scientific Mission
Title: Exploring the Duality between Geometric Networks and Stochastic Learning Machines through the Lens of the Crystallisation Conjecture
Amount: €2000

2023 FSU Funding Programme: Organising Academic Events
Amount: €1500

2017 - 2021 EPSRC DTP Studentship
Title: Special geometric structures and integrability
Amount: cca. £70 000

AWARDS

2016 1st prize in Czech-Slovak competition for university students in mathematical research (SVOČ)
Section: Algebra, Topology and Geometry
Title: Metrizability problem and invariant first order differential operators

ORGANISED EVENTS

2023 Regional Workshop in Algebraic Geometry, Jena

RESEARCH VISITS

2024 KTH, 3 weeks

CONFERENCE ACTIVITY

2024 BRIDGES meeting in Gauge Theory, extremal structures and stability, Cargèse

2023 Singularities and torus actions, Oldenburg

2023 Training school on Cartan geometry, Brno

2023 Gauge theory and its application to geometry and low-dimensional topology, Regensburg

2023 43rd Winter School of Geometry and Physics, Srní
Talk title: Separable geometries and new examples of extremal Kähler metrics

2022 Geometry and Topology of Homogeneous Spaces, Będlewo conference center

2022 Differential Geometry and its Applications, Hradec Králové

2022 Workshop on Complex Analysis and Geometry (Grauert Tubes), Essen

2022 Invariants in Algebraic Geometry, Dijon

2021 ITT13, 13th Integrative Think Tank, online

2020 IMA, LMS Joint Meeting: Topological methods in Data Science, online

2020 Winter School of Geometry and Physics, Srní

2019 Kähler and special toric geometry, London

2019 Winter School of Geometry and Physics, Srní
Talk title: Examples of toric extremal Kähler metrics

2018 Eduard Čech Institute meeting, Telč

2018 Winter School of Geometry and Physics, Srní

2017 11th International Conference on Clifford Algebras and Their Applications in Mathematical Physics, Ghent

2017 Winter School of Geometry and Physics, Srní
Talk title: C-spinorial geometry and metrisability problem

2016 Winter School of Geometry and Physics, Srní

RESEARCH TALKS

2021 Oberseminar Algebra, Jena
Title: Constructing new and unifying old examples of extremal toric Kähler metrics

2019 Postgraduate Seminar Series, Bath
Title: Simplicial homology

2018 Topics in geometry, Bath
Title: Bounded derived categories of coherent sheaves on $\mathbb{P}^1$ and representations of Kronecker quiver are equivalent

2017 Week of Doctoral Students, Prague
Title: Metrizability problem

TEACHING EXPERIENCE

University of Jena

toric varieties (SS, 2024, lecturer)
oberseminar: derived categories (WS, 2023, organiser)
Kähler geometry (WS 2023, lecturer)
basic category theory (SS 2023, lecturer)
advanced topics in differential geometry (SS 2023, lecturer)
vector, principal and fibre bundles, connections, and characteristic classes (WS 2022, lecturer)
toric symplectic geometry (SS 2022, lecturer)
linear algebra (WS 2021, tutor)

University of Bath

mathematical analysis (WS 2017, SS 2018, tutor)
linear algebra (WS 2018, WS 2019, tutor)
algebra (SS 2019, SS 2020, tutor)
group theory (WS 2019, teaching assistant)

Charles University

linear algebra (WS 2016, SS 2017, tutor)

University of Economics in Prague

mathematical praktikum (WS 2015, SS 2016, WS 2016, tutor)
mathematics A (SS 2015, tutor)

SUPERVISED THESES

2023 Complex Geometry
Konrad Brandts, University of Jena

EXTRA TRAINING

2020 two-week training at High Performance Computing Academy organised by the Centre of Scientific Computing, Cambridge

2018 module Scientific Report Writing, Bath

2018 module Presentation Skills, Bath

LANGUAGES

Slovak	native
Czech	fluent
English	fluent