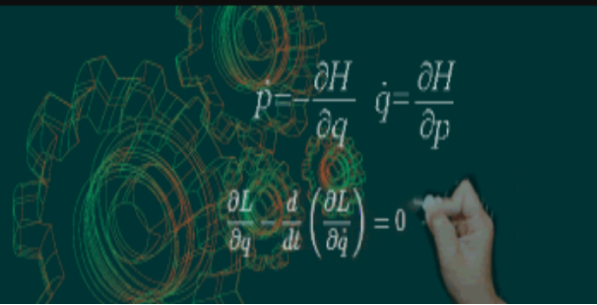# GDFT Network

Geometry, Dynamics and Field Theory Network Infosheet

October 2023

Editors: Miguel Berbel, Viviana Díaz, Rodrigo Sato

Contents

Network's activities

"deLeonfest 2023": An interdisciplinary conference on Geometric Mechanics and Related Fields.
11–13 December 2023, Madrid, Spain.

XVIII International Young Researchers Workshop in Geometry, Dynamics and Field Theory.
21–23 February 2024, Warsaw, Poland.

Other conferences

Infinite Dimensional Geometry and Fluids.
5–10 November 2023, Banff, Canada.

Control Methods in Hyperbolic Partial Differential Equations.
5–10 November 2023, Oberwolfach, Germany.

International Conference on Continuum Mechanics.
6–7 November, 2023, Cape Town, South Africa.

International Conference on Mathematics and Theoretical Physics.
6–7 November, 2023, San Francisco, USA.

International Conference on Physics and Mathematics.
6–7 November, 2023, Cape Town, South Africa.

Recent advances in geometric analysis.
6–10 November 2023, Luminy, France.

Small scale dynamics in incompressible fluid flows.
6–10 November 2023, Pasadena, USA.

International Conference on Quantum Physics and Mathematical Techniques.
8–9 November 2023, Dubai, United Arab Emirates.

Optimal Transport Theory and Hydrodynamics (from Euler to Monge and vice versa).
13–17 November 2023, Oberwolfach, Germany.

Emergent Hydrodynamics of Integrable Systems and Soliton Gases.
13–17 November 2023, Luminy, France.

Mathematical billiards: at the crossroads of dynamics, geometry, analysis, and mathematical physics.
13–17 November 2023, New York, USA.

International Conference on Physics and Mathematics.
13–14 November 2023, Dubai, United Arab Emirates.

International Conference on Quantum Physics and Mechanics.
13–14 November 2023, Dubai, United Arab Emirates.

International Multibody Dynamics Conference.
15–16 November 2023, Munich, Germany.

Scattering Resonances in Quantum Mechanics, General Relativity and Hyperbolic Dynamics.
19–24 November 2023, Oberwolfach, Germany.

International Conference on Continuum Mechanics and Conservation Laws.
27–28 November 2023, Singapore, Singapore.

International Conference on Quantum Physics and Relativity.
2–3 December 2023, Sidney, Australia.

Vortex Dynamics: the Crossroads of Mathematics, Physics and Applications.
3–8 December 2023, Banff, Canada.

International Conference on Symplectic Geometry in Physics.
4–5 December 2023, Kuala Lumpur, Malaysia.

International Conference on Mathematical and Theoretical Physics.
4–5 December 2023, Sidney, Australia.

International Conference on Physics and Symplectic Geometry.
4–5 December 2023, Tokyo, Japan.

8th Iberoamerican Congress on Geometry.
10–15 December 2023, Pucón, Chile.

International Conference on Physics and Mathematics.
11–12 December 2023, Roma, Italy.

Mathematical Analysis of Viscous Incompressible Fluid.
11–13 December 2023, Kyoto, Japan.

International Conference on Theoretical Physics and Classical Mechanics.
18–19 December 2023, Barcelona, Spain.

International Conference on Theoretical Physics and Mathematical Physics.
18–19 December 2023, Barcelona, Spain.

International Conference on Mathematical Physics and Dynamical Systems.
18–19 December 2023, Cairo, Egypt.

Indian Control Conference.
18–20 December 2023, Visakhapatnam, India.

International Conference on Mathematical and Computational Methods in Physics.
25–26 December 2023, Dubai, United Arab Emirates.

AMS Special Session on Geometric Group Theory.
3–6 January 2024, San Francisco, United States.

Equivariant methods in geometry.
8–12 January 2024, Cambridge, United Kingdom.

Winter School in Mathematical Physics.
7–12 January 2024, Les Diablerets, Switzerland.

International Conference on Nonlinear Mathematics and Physics.
11–12 January 2024, Tokyo, Japan.

International Conference on Continuum Mechanics and Mathematical Physics.
11–12 January 2024, Zurich, Switzerland.

International Conference on Computational and Theoretical Physics.
15–16 January 2024, Bangkok, Thailand.

Spectral Analysis for Quantum Hamiltonians.
15–19 January 2024, Luminy, France.

Layering — A structure formation mechanism in oceans, atmospheres, active fluids and plasmas.
15–19 January 2024, Cambridge, United Kingdom.

Discrete Geometry.
21–26 January 2024, Oberwolfach, Germany.

Conformal field theory 3 ways: integrable, probabilistic, and supersymmetric.
21–26 January 2024, Les Diablerets, Switzerland.

Numerical PDEs: Analysis, Algorithms, and Data Challenges.
29 January–3 May 2024, Providence, USA.

International Conference on Mathematical and Theoretical Physics.
1–2 February 2024, Rio de Janeiro, Brazil.

International Conference on Mathematical Physics.
1–2 February 2024, Guangzhou, China.

International Conference on Mathematical Physics, and Applications.
2–3 February 2024, Rio de Janeiro, Brazil.

Phase Mixing, Kinetic Theory and Fluid Mechanics.
4–9 February 2024, Les Diablerets, Switzerland.

Geometric and Asymptotic Group Theory with Applications.
5–9 February 2024, Luminy, France.

Lectures on Statistical Field Theories.
5–16 February 2024, Firenze, Italy.

Texas Analysis and Mathematical Physics Symposium.
9–11 February 2024, Texas, USA.

Interfaces, Free Boundaries and Geometric Partial Differential Equations.
11–16 February 2024, Oberwolfach, Germany.

Numerical Analysis of Multiphysics Problems.
12–16 February 2024, Providence, USA.

Structured Machine Learning and Time–Stepping for Dynamical Systems.
18–23 February 2024, Banff, Canada.

Workshop in Mathematical Physics.
18–23 February 2024, Les Diablerets, Switzerland.

International Conference on Mathematical Physics, and Applications.
19–20 February 2024, Paris, France.

International Conference on Nonlinear Mathematical Physics.
19–20 February 2024, Rome, Italy.

International Conference on Mathematical Physics.
19–20 February 2024, Paris, France.

International Conference on Mathematical and Theoretical Physics.
19–20 February 2024, Paris, France.

Workshop on Quantum Simulators of the Future: From Dynamical Gauge Fields to Lattice Gauge Theories.
20–22 February 2024, Trieste, Italy.

International Conference on Mathematical Physics, and Applications.

26–27 February 2024, Sydney, Australia.

VIII Latin American Worshop on Optimization and Control.
26 February–1 March 2024, Córdoba, Argentina.

Mathematical Aspects of N=4 Super-Yang-Mills Theory.
26 February–1 March 2024, New York, United States.

Mini-Workshop: Skew Braces and the Yang–Baxter Equation.
26 February–4 March 2024, Oberwolfach, Germany.

Mini-Workshop: Free Boundary Problems Arising in Fluid Mechanics.
26 February–4 March 2024, Oberwolfach, Germany.

International Conference on Mathematical and Theoretical Physics.
4–5 March 2024, Barcelona, Spain.

International Conference on Mathematical and Computational Methods in Physics.
11–12 March 2024, London, United Kingdom.

International Conference on Nonlinear Mathematical Physics.
11–12 March 2024, Prague, Czechia.

Conformal Field Theory, Integrability, and Geometry.
11–15 March 2024, New York, USA.

PDEs and Geometry: Numerical Aspects.
11–15 March 2024, Providence, USA.

School of Physics and Mathematics Without Frontiers.
11–23 March 2024, Trieste, Italy.

New Directions in far from Equilibrium Integrability and beyond.
11 March–10 May 2024, New York, United States.

International Conference on Mathematical Physics, and Applications.
18–19 March 2024, Madrid, Spain.

International Conference on Mathematical Physics and Advanced Mathematics.
18–19 March 2024, Tokyo, Japan.

Workshop on New Directions in Conformal Field Theory.
18–22 March 2024, Toronto, Canada.

Rare Events in Dynamical Systems.
18–22 March 2024, Wien, Austria.

International Conference on Mathematical and Computational Methods in Physics.
25–26 March 2024, Paris, France.

Mathematical and Computational Modelling of Anti-Diffusive Phenomena.
25–28 March 2024, Cambridge, United Kingdom.

Statistical Mechanics and Discrete Geometry.
25–29 March 2024, Los Angeles, USA.

14th International Conference on Applied Physics and Mathematics.
10–12 April 2024, Taipei, Taiwan.

International Conference on Theoretical Physics and Mathematics.
11–12 April 2024, Paris, France.

Modern Methods for Differential Equations of Quantum Mechanics.
21–26 April 2024, Banff, Canada.

Online course

Equivariant methods in geometry.
8–12 January 2024, Cambridge, United Kingdom.

Virtual seminars

Seminar of the Geometry, Dynamics and Field Theory Thematic Network.
Instituto de Ciencias Matemáticas' seminars on these topics.

Mathematics and High Energy Physics Seminars.
ICTP-PWF Latin America-Physics Latam New Seminar Series.

One World IAMP Mathematical Physics Seminar.
Seminar of International Association of Mathematical Physics.

Seminar on Geometry with Symmetries.
On Lie group actions in Riemannian geometry.

Control and Optimization Seminar.
Louisiana State University.

Differential Geometry Seminar Torino.
Organised by the Differential Geometry groups of Università di Torino and Politecnico di Torino.

Symplectic Zoominar.
Online Seminar organized by CRM-Montréal, Princeton/IAS, Tel Aviv, and Paris.

ICTP Virtual Seminars.
Online Seminar organized by International Centre for Theoretical Physics.

Theory of Duality Seminar.
Department of Mathematical Methods in Physics, University of Warsaw.

Geometry and Topology Online.
Warwick Mathematics Institute.

Job offers, fellowships and supports

Ph.D. offers

PhD position in Geometry of Dynamical Systems.
ICMAT–Institute of Mathematical Sciences, Madrid, Spain
Closing date: 10 November 2023.

PhD positions in Mathematics.
University of Copenhagen, Copenhagen, Denmark
Closing date: 15 November 2023.

PhD positions in Mathematics.
Berlin Mathematical School, Berlin, Germany
Closing date: 1 December 2023.

PhD position in Higher Structures.
University of Hamburg, Hamburg, Germany
Closing date: 1 December 2023.

3 PhD positions in Robotics.
Eindhoven University of Technology, Eindhoven, Netherlands
Closing date: 1 December 2023.

PhD positions in Algebraic Geometry .
Leibniz University Hannover, Hannover, Germany
Closing date: 10 December 2023.

PhD position in Arithmetic Geometry.
Utrecht University, Utrecht, Netherlands
Closing date: 10 December 2023.

PhD positions in Pure Mathematics.
KU Leuven, Leuven, Belgium
Closing date: 12 February 2024.

PhD position in Control of Multi-Agent Systems.
University of Granada, Granada, Spain

Closing date: Open Untill Filled.

3 PhD positions in Geometry for Fluid Dynamics.
NTU Singapore, Singapore, Singapore
Closing date: Open Until Filled. Apply by email.

Postdoctoral fellowships

Postdoctoral positions in Geometric Variational Principles.
University of Vienna, Vienna, Austria
Closing date: 5 November 2023.

Postdoctoral positions in IST-BRIDGE program.
The Institute of Science and Technology Austria, Klosterneuburg, Austria
Closing date: 11 November 2023.

Postdoctoral position in Low-Dimensional Topology/Geometry.
University of Oxford, Oxford, United Kingdom
Closing date: 24 November 2023.

Postdoctoral positions in Mathematics.
Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany
Closing date: 30 November 2023.

Two Postdoctal positions as Milnor Lecturer.
Stony Brook University, Stony Brook (NY), United States of America
Closing date: 30 November 2023.

Posdoctoral position in Hyperbolic Conservation Laws.
University of Cyprus, Nicosia, Cyprus
Closing date: 30 November 2023.

Postdoctoral position in Quantum Mathematics.

University of Southern Denmark, Odense, Denmark
Closing date: 1 December 2023.

Postdoctoral position in Mathematics.
ICMAT – Institute of Mathematical Sciences, Madrid, Spain
Closing date: 1 December 2023.

Postdoctoral position in Mathematical Physics.
Leibniz University Hannover, Hannover, Germany
Closing date: 10 December 2023.

Postdoctoral positions in Pure Mathematics.
KU Leuven, Leuven, Belgium
Closing date: 8 January 2024.

Postdoctoral positions in Mathematics.
Tsinghua University, Beijing, China
Closing date: 1 March 2024.

Postdoctoral position in Geometry for Fluid Dynamics.
NTU Singapore, Singapore, Singapore
Closing date: Open Until Filled. Apply by email.

Humboldt research fellowship for postdoctoral researchers.
Alexander von Humboldt Foundation
Closing date: Open.

Offers for researchers

Tenure-track position in Applied Mathematics.
University of Technology Nuremberg, Nuremberg, Germany
Closing date: 5 November 2023.

Assistant Professor in Differential/Algebraic Geometry.
University of South Florida, Tampa (FL), United States of America
Closing date: 6 November 2023.

Assistant Professor in Mathematical Physics.

University of California San Diego, La Jolla(CA), United States of America
Closing date: 6 November 2023.

Professor position in Mathematics for Living Systems.
Max Planck Institute Dresden, Dresden, Germany
Closing date: 10 November 2023.

Tenure-track position in Mathematics.
University of North Carolina, Chapel Hill (NC), United States of America
Closing date: 12 November 2023.

Professor of Mathematics.
Harvard University, Cambridge (MA), United States of America
Closing date: 1 December 2023.

Professorship in Algebra or Geometry.
University of Basel, Basel, Switzerland
Closing date: 11 December 2023.

Professor position in Quantum Mathematics.
University of Southern Denmark, Odense, Denmark
Closing date: 1 February 2024.

Tenure Track Position in Differential Geometry.
University of California, Santa Barbara(CA) , United States of America
Closing date: Open Until Filled.

Offers for visiting researchers

Abel Visiting Scholar Program.
International Mathematical Union.
Postdoctoral mathematician to visit a research collaborator for a month.
Closing date: 31 December, 30 April and 31 August.

Simons Visiting Professors at Mathematisches Forschunginstitut Oberwolfach.
Oberwolfach, Germany.
Junior or senior scientists from outside Europe.
Closing date: Open.

Focused research groups in Banff, Canada.
Banff International Research Station, Canada.
Up to 8 researchers for periods of 1 to 2 weeks.
Closing date: Minimum 4 months before the event.

Research in Teams in Banff, Canada.
Banff International Researh Station, Canada.
Teams of 2 to 4 researchers for 1 to 2 weeks.
Closing date: Minimum 4 months before the event.

International Research in Groups at CIRM.
Centre International de Rencontres Mathématiques (CIRM), France.
Small groups of researchers for 2 to 4 weeks.
Closing date: Open at any time.

Research in Residence at CIRM.
Centre International de Rencontres Mathématiques (CIRM), France.
2 to 4 researchers.
Closing date: Open at any time.

Visiting scholar opportunity in Cambridge.
University of Cambridge, United Kingdom.
Scholars and fellows for development of research, teaching and collaboration.
Closing date: Open.

Small team visiting the CRM.
Centre de Recerca Matemàtica, Catalonia, Spain.
Postdoctoral positions and research in pairs.
Closing date: Any time between 6 and 12 months before the start of the desired stay.

Visiting research fellow in Kent State University.
Mathematics Department-KSU, Ohio, USA.
Visiting for scholar researchers.
Closing date: Open.

Financial support

IMU Conference support program.
For conferences in developing or economically disadvantaged countries.
Deadline: 15 April, 15 July and 1 October.

Thematic programs at MSRI.
Mathematical Sciences Research Institute, Berkeley, United States.
Deadline: 1 December, 1 March and 1 October every year. Three years ahead.

Hot topics Workshop at MSRI.
Mathematical Sciences Research Institute, Berkeley, United States.
Deadline: 1 December, 1 March and 1 October every year every year.

Summer graduate schools at MSRI.
Mathematical Sciences Research Institute, Berkeley, United States.
Deadline: 1 December, 1 March and 1 October every year every year.

IMU Volunteer Lecturer Program.
Financial assistance to universities in developing countries to host a 3-4-week intensive course.
Deadline: 15 March, 1 June 2024, and 1 September 2023.

Workshop at CIRM.
Centre International de Rencontres Mathématiques, France.
Deadline: Open at any time.

CIMPA Online courses program.

Geographic areas of activities of CIMPA (Africa, Central or South America, Asia).
Deadline: Open all year.

Support for workshop organization at Banff.
Banff International Research Station.
Deadline: No precise deadline.

Proposal of a workshop in the Mathematisches

Forschunginstitut Oberwolfach.
Oberwolfach, Germany.
Deadline: Open.

Hosting a workshop at AIMS South Africa.
Contributions for workshops about AIMS's research focus areas.
Deadline: No precise deadline.

Interesting news and publications

Journal

Journal "Geometric Mechanics".
Published by World Scientific about applications of geometric methods in mechanics, dynamics, control, transport, stochastic processes, data science, and learning.
Deadline: No precise deadline.

Thesis

Path planning on Riemannian manifolds with applications to quadrotor load transportation. PhD Thesis.
Author: Jacob Goodman.

Advisor: Leonardo Colombo.
Place: ICMAT, Madrid, Spain.
Date: 22 September 2023.

Preprints

Network's members

Efstratios Stratoglou, Alexandre Anahory Simões, Anthony Bloch and Leonardo J. Colombo: *On the Geometry of Virtual Nonlinear Nonholonomic Constraints.*
2310.01849
[math.OC, cs.SY, eess.SY, math-ph, math.MP]

Eduardo Fernández-Saiz, Rutwig Campoamor-Stursberg and Francisco J. Herranz: *Generalized time-dependent SIS Hamiltonian models: Exact solutions and quantum deformations.*
2310.02688 (version 2)
[math-ph, math.DS, math.MP, nlin.SI]

Sergio Blanes, Fernando Casas, Cesáreo González and Mechthild Thalhammer: *Generalization of splitting methods based on modified potentials to nonlinear evolution equations of parabolic and Schrödinger type.*
2310.08969
[math.NA, cs.NA, math-ph, math.MP]

Luis Crespo and Álvaro Pelayo: *Ewald's Conjecture and integer points in algebraic and symplectic toric geometry.*
2310.10366 (version 2)
[math.CO, math.AG, math.SG]

Carlos D. F. J. Bernardes and César Rodrigo: *A model for runway operation decisions with stable queues.*
2310.11995
[math.OC]

Nathael Da Costa, Cyrus Mostajeran, Juan-Pablo Ortega and Salem Said: *Geometric Learning with Positively Decomposable Kernels.*
2310.13821
[cs.LG, math.DG, stat.ML]

Francisco J. Herranz, Ángel Ballesteros, Giulia Gubitosi and Iván Gutiérrez-Sagredo: *Noncommutative spacetimes versus noncommutative spaces of geodesics.*
2310.14123
[hep-th, gr-qc, math-ph, math.MP]

Guglielmo Fucci and César Romaniega Sancho: *Vacuum energy of scalar fields on spherical shells with general matching conditions.*
2310.16756
[hep-th, math-ph, math.MP]

Jacob R. Goodman and Leonardo J. Colombo: *Reduction of Sufficient Conditions in Variational Obstacle Avoidance Problems.*
2310.18057
[math.OC, cs.SY, eess.SY, math.DG, math.DS]

Jacob R. Goodman and Leonardo J. Colombo: *Reduction of Necessary Conditions for the Variational Collision Avoidance Problem.*
2310.18389
[math.OC, cs.SY, eess.SY, math.DG, math.DS]

Network's collaborators

Kehan Long, Khoa Tran, Melvin Leok and Nikolay Atanasov: *Safe Stabilizing Control for Polygonal Robots in Dynamic Elliptical Environments.*
2310.00273
[cs.RO, math.OC]

José Ignacio Royo Prieto, Martintxo Saralegi-Aranguren and Robert Wolak: *Hard Lefschetz property for $\mathbb{S}^3$-actions.*
2310.00466
[math.DG]

Marcos Salvai: *The sub-Riemannian length spectrum for screw motions of constant pitch on flat and hyperbolic 3-manifolds.*
2310.00759
[math.DG]

James Montaldi: *Equilibria and bifurcations in contact dynamics.*
2310.00764
[math.DS, math-ph, math.MP, math.SG]

Alberto S. Cattaneo, Leon Menger and Michele Schiavina: *Gravity with torsion as deformed BF theory.*
2310.01877 (version 2)
[math-ph, gr-qc, hep-th, math.MP]

Carlos Heredia and Josep Llosa: *Nonlocal Lagrangian fields and the second Noether theorem. Noncommutative $U(1)$ gauge theory.*
2310.03070
[hep-th, math-ph, math.MP]

Yacine Chitour, Sébastien Fueyo, Guilherme Mazanti and Mario Sigalotti: *Approximate and exact controllability criteria for linear one-dimensional hyperbolic systems.*
2310.04088
[math.OC]

J. I. Royo Prieto, M. Saralegi Aranguren and R. Wolak: *Smith-Gysin Sequence.*
2310.04309 (version 2)
[math.AT, math.DG, 58D05 (Primary) 14F05, 55N10 (Secondary)]

Jaume Llibre and Gabriel Rondón: *Global centers of a class of cubic polynomial differential systems.*

2310.07454
[math.DS]

Felix Finster and Niky Kamran: *A Positive Quasilocal Mass for Causal Variational Principles.*
2310.07544
[math-ph, gr-qc, math.DG, math.MP]

Salvatore D. Pace, Chenchang Zhu, Agnès Beaudry and Xiao-Gang Wen: *Generalized symmetries in singularity-free nonlinear -models and their disordered phases.*
2310.08554
[cond-mat.str-el, hep-th, math-ph, math.MP]

David Juher, Francesc Mañosas and David Rojas: *Characterization of the tree cycles with minimum positive entropy for any period.*
2310.14862
[math.DS]

Philip Arathoon: *Relative Equilibria of Mechanical Systems with Rotational Symmetry.*
2310.15035
[math-ph, math.DS, math.MP, math.SG]

A. Alonso-Izquierdo, D. Miguélez-Caballero and L. M. Nieto: *Wobbling kinks and shape mode interactions in a coupled two-component ϕ^4 theory.*
2310.15738
[nlin.PS, hep-th, math-ph, math.MP]

Amaury Hayat, Arwa Alanqary, Rahul Bhadani, Christopher Denaro, Ryan J. Weightman, Shengquan Xiang, Jonathan W. Lee, Matthew Bunting, Anish Gollakota, Matthew W. Nice, Derek Gloudemans, Gergely Zachar, Jon F. Davis, Maria Laura Delle Monache, Benjamin Seibold, Alexandre M. Bayen, Jonathan Sprinkle, Daniel B. Work and Benedetto Piccoli: *Traffic smoothing using explicit local controllers.*
2310.18151
[eess.SY, cs.SY, math.OC]

Amadeu Delshams, Albert Granados and Rodrigo G. Schaefer: *Arnold diffusion for an a priori unstable Hamiltonian system with $3 + 1/2$ degrees of freedom.*
2310.18787
[math.DS, 37J40]

Links of interest

Geometry, Dinamics and Field Theory Network

Journal "Geometric Mechanics"

International Mathematical Union (IMU) Newsletter - September 2023

Instituto de Ciencias Matemáticas (ICMAT) Newsletter - August 2023

International Association of Mathematical Physics Bulletin - July 2023

European Mathematical Society

Royal Spanish Mathematical Society (RSME)

International Association of Mathematical Physics

Open Access American Institute of Mathematical Sciences (AIMS) Journal

International Centre for Theoretical Physics (ICTP)

European Research Council

European Commission - Research and Innovation

International Center of Pure and Applied Mathematics (CIMPA)

Mathematical and physical sciences funding, National Science Foundation, USA

Open Access Mathematics Journals

Open Access Physics Journals

Societat Catalana de Matemàtiques (SCM) journal on Mathematics

SIAM Activity Groups award various prizes

International Mathematical Union Awards and Prizes

Other Prizes of International Mathematical Union

American Mathematical Society Prizes and Awards

Mathematical Association of America Awards

Association for Women in Mathematics Awards

IEEE Control Systems Society Awards

Royal Society of London Premier Medals and Awards

London Mathematical Society Prizes

The Shaw Prize

The Henri Poincarè Prize

European Mathematical Society Funding and Sponsorship

The British Royal Society Grants

The British Royal Society's medals and award