



GEOMETRY, DYNAMICS
AND FIELD THEORY NETWORK

November 2024

Editors: Miguel Berbel, Viviana
Díaz, Rodrigo Sato

Contents

Network's activities	1
Other conferences	1
Virtual seminars	3
Job offers, fellowships and supports	4
Ph.D. offers	4
Postdoctoral fellowships . .	4
Offers for researchers	5
Offers for visiting researchers	5
Financial support	6
News and publications	7
Journals	7
Preprints	7
Network's members	7
Network's collaborators . .	7
Links of interest	8

Geometry, Dynamics and Field Theory Network Infosheet

Network's activities

19th International Young Researchers Workshop on Geometry, Dynamics, and Field Theory.
20–22 January 2025, Verona, Italy.

Other conferences

24th Australasian Fluid Mechanics Conference.
1–5 December 2024, Canberra, Australia.

Quantum information dynamics and non-equilibrium quantum matter.
2–6 December 2024, New York, USA.

Course on Applications of Group Theory in Physics.
2–13 December 2024, Korhogo, Ivory Coast.

13th International Conference on Computational Mechanics.
6–8 December 2024, Sanya, China.

Data-driven Modeling, Analysis, and Control of Dynamical Systems.
8–13 December 2024, Oberwolfach, Germany.

High-Dimensional Control Problems and Mean-Field Equations with Applications in Machine Learning.
8–13 December 2024, Oberwolfach, Germany.

Foliations and Diffeomorphism Groups.
9–13 December 2024, Luminy, France.

7th International Conference on Soft Computing, Control and Mathematics (Virtual).
14–15 December 2024.

The AIMS Conference Series on Dynamical Systems, Differential Equations, and Applications.
16–20 December 2024, Abu Dhabi, United Arab Emirates.

- Energy Operators in Particle Physics, Quantum Field Theory and Gravity.**
16–20 December 2024, New York, USA.
- Winter School in Mathematical Physics.**
5–10 January 2025, Les Diablerets, Switzerland.
- Winter School: Boundary and Singularity in Fluid Mechanics.**
6–10 January 2025, New York, USA.
- Representation Theory and Noncommutative Geometry.**
6 January–4 April 2025, Paris, France.
- 22nd International Workshop on Computational Physics and Materials Science: Total Energy and Force Methods.**
8–10 January 2025, Trieste, Italy.
- Workshop on Resurgence, wall-crossing & geometry.**
12–17 January 2025, Les Diablerets, Switzerland.
- Infinite-dimensional Geometry: Theory and Applications.**
13 January–14 February 2025, Vienna, Austria.
- Algebra and Quantum Geometry of BPS Quivers.**
19–24 January 2025, Les Diablerets, Switzerland.
- Arithmetic, Algebraic and Analytic Dynamics.**
20–24 January 2025, Luminy, France.
- Patterns, Dynamics, and Data in Complex Systems.**
21–24 January 2025, Luminy, France.
- Rotating Turbulence: Interplay and Separability of Bulk and Boundary Dynamics.**
27–31 January 2025, Los Angeles, USA.
- Singularities, differential equations, transcendence.**
27 January–28 February 2025, Luminy, France.
- Statistical mechanics, Algebra, and Geometry.**
2–7 February 2025, Les Diablerets, Switzerland.
- Lectures on Statistical Field Theories.**
3–14 February 2025, Firenze, Italy.
- The 30th Southern California Geometric Analysis Seminar.**
8–9 February 2025, Irvine, USA.
- Geometric Structures in Group Theory.**
9–14 February 2025, Oberwolfach, Germany.
- Stochastic Equations and Stochastic Dynamics.**
9–14 February 2025, Les Diablerets, Switzerland.
- Mathematical Challenges in Quantum Mechanics.**
9–14 February 2025, L'Aquila, Italy.
- Geometric partial differential equations from unified string theories.**
10–14 February 2025, Pasadena, USA.
- Circle Packings, Minimal Surfaces, and Discrete Differential Geometry.**
10–14 February 2025, Providence, USA.
- Microlocal and Global Analysis, Interactions with Geometry.**
10–14 February 2025, Postdam, Germany.
- MATRIX-MFO Tandem Workshop: Non-linear Geometric Diffusion Equations.**
23–28 February 2025, Oberwolfach, Germany.
- Geometric Analysis.**
3–7 March 2025, Geilo, Norway.
- Evolving Design and Discrete Differential Geometry: towards Mathematics Aided Geometric Design.**
10–13 March 2025, Fukuoka, Japan.
- Workshop on Differential Geometry.**
10–14 March 2025, Maceio, Brazil.
- Non-commutative Optimal Transport.**
10 March–13 June 2025, Los Angeles, USA.
- Conformal Field Theory, Integrability, and Geometry.**
11–15 March 2025, New York, USA.
- Geometric Mechanics Formulations for Continuum Mechanics.**
16–21 March 2025, Banff, Canada.
- Supersymmetric Quantum Field Theories, Vertex Operator Algebras, and Geometry.**
17 March–18 April 2025, New York, USA.
- Kinetic theory and fluid mechanics: couplings, scalings and asymptotics.**
24–28 March 2025, Luminy, France.
- Representation Theory, Symplectic Geometry, and Cluster Algebras.**
30 March–4 April 2025, Banff, Canada.

New directions in G2 geometry.
31 March–4 April 2025, Pasadena, USA.

Symplectic Singularities, Supersymmetric QFT, and Geometric Representation Theory.

31 March–4 April 2025, New York, USA.

Hyperbolic & Dispersive Equations on Curved Geometries: Connections to Physics and General Relativity.

7–11 April 2025, New York, USA.

Applications of NonCommutative Geometry to Gauge Theories, Field Theories, and Quantum Space-Time.

7–11 April 2025, Luminy, France.

Geometry of Materials.

7–11 April 2025, Providence, USA.

15th International Conference on Applied Physics and Mathematics.

10–12 April 2025, Tokyo, Japan.

Interactions of Geometric and Quantum Topology focused on Links in Thickened Surfaces.

13–18 April 2025, Banff, Canada.

Integro-differential equations in many-particle interacting systems.

14–18 April 2025, California, USA.

Geometric structures and discrete group actions.

14–18 April 2025, Luminy, France.

Higher rank geometric structures.

14 April–11 July 2025, Paris, France.

11th International Conference on Control, Automation and Robotics.

18–20 April 2025, Kyoto, Japan.

Fluid solid interactions and related problems.

21–25 April 2025, Luminy, France.

3rd International Conference on Intelligent Control and Computing.

25–27 April 2025, Changchun, China.

Dynamics of Density Operators.

28 April–2 May 2025, Los Angeles, USA.

Dispersive Integrable Equations: Pathfinders in Infinite-Dimensional Hamiltonian Systems.

28 April–2 May 2025, Luminy, France.

Gauge Theory and Floer Homology in Low Dimensional Topology.

28 April–2 May 2025, New York, USA.

Virtual seminars

Seminar of the Geometry, Dynamics, and Field Theory Thematic Network.

Instituto de Ciencias Matemáticas' seminars on these topics.

Geometry and Applications: Modern Mathematical Approaches (GAMMA) Seminar.

University of Warsaw, the Universitat Rovira i Virgili, and the Polytechnic University of Catalonia.

Advanced Lectures on Theoretical Physics and Mathematics.

ICTP-PWF Latin America-Physics Latam New Seminar Series.

Trans-Carpathian Seminar on Geometry and Physics.

A merger of Bucharest Geometry and Physics Seminar and Warsaw Seminar on Geometric Methods in Physics.

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.

Instituto Balseiro Seminar.
Instituto Balseiro' public seminars live on Youtube.

Job offers, fellowships and supports

Ph.D. offers

PhD positions in Gravitational Physics.
Max Plank Insitute, Potsdam, Germany
Closing date: 6 December 2024.

PhD position in Geometric Learning.
The University of Edinburgh, Edinburgh, United Kingdom
Closing date: 16 December 2024.

15 PhD positions in Tensor Modelling, Geometry and Optimisation.
University of Cote d'Azur, Antibes, France
Closing date: 31 December 2024.

PhD position in Calculus of Variations.
University of Ottawa, Ottawa, Canada
Closing date: 31 December 2024.

PhD position in Analysis of PDEs.
Regensburg University, Regensburg, Germany
Closing date: 31 December 2024.

PhD positions in Mathematics.

Institute of Science and Technology Austria,
Klosterneuburg, Austria
Closing date: 7 January 2025.

PhD position in Variational Analysis.
KU Eichstätt-Ingolstadt, Eichstätt, Germany
Closing date: 10 January 2025.

PhD positions in Geometric Modelling.
Johannes Kepler University Linz, Linz, Austria
Closing date: 15 January 2025.

PhD position in Spectral Theory.
Aix-Marseille University, Marseille, France
Closing date: 3 February 2025.

PhD scholarship in Geometry of 4-manifolds.
University of Adelaide, Adelaide, Australia
Closing date: Open until filled.

PhD position in Differential Geometry.
University of Vienna, Vienna, Austria
Closing date: Open until filled.

Postdoctoral fellowships

Postdoctoral position in Mathematical Physics.
University of Oxford, Oxford, United Kingdom
Closing date: 2 December 2024.

Postdoctoral position in Fluid Equations.
ETH Zurich, Zurich, Switzerland
Closing date: 14 December 2024.

Postdoctoral position in Mathematical Physics.
University of Oxford, Oxford, United Kingdom
Closing date: 16 December 2024.

Postdoctoral researcher in Ergodic Theory.
University of Lille, Villeneuve-d'Ascq, France
Closing date: 17 December 2024.

Postdoctoral position in Applied Analysis.

Technical University of Munich, Munich, Germany
Closing date: 20 December 2024.

Postdoctoral position in Optimal Control.
INRIA, Montpellier, France
Closing date: 31 December 2024.

Posdoctoral position in Geometric Finite Elements.
University of Edinburgh, Edinburgh, United Kingdom
Closing date: 4 January 2025.

Posdoctoral position in Fluid Dynamics.
University of Bath, Bath, United Kingdom
Closing date: 5 January 2025.

Postdoctoral position in Mathematics.
University of Fribourg, Fribourg, Switzerland
Closing date: 15 January 2025.

Postdoctoral position in Variational Analysis .

Autonomous University of Madrid, Madrid, Spain
Closing date: 17 January 2025.

Postdoctoral position in Fellowship.

UCLouvain, Louvain-la-Neuve, Belgium
Closing date: 30 January 2025.

Offers for researchers

Associate Professor in Geometry.

University of Oxford, Oxford, United Kingdom
Closing date: 2 December 2024.

Full professor position in Mathematical Analysis.

Bocconi University, Milan, Italy
Closing date: 15 December 2024.

Senior Scientist in Applied Mathematics.

University of Leoben, Leoben, Austria
Closing date: 17 December 2024.

Tenure-track position in Mathematics.

Queen's University, Kingston, Canada
Closing date: 3 January 2025.

Full professor in Geometry and Dynamics.

Heidelberg University, Heidelberg, Germany
Closing date: 6 January 2025.

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.

Visiting Scholars or Consultants to Institutes in Developing Countries.

International Centre of Theoretical Physics (ICTP).
To expert advice to enhance existing activities or to initiate a new research programme..
Closing date: 31 May.

Simons Visiting Professors at Mathematisches Forschungsinstitut Oberwolfach.

Oberwolfach, Germany.
Junior or senior scientists from outside Europe.
Closing date: Open.

Postdoctoral Position in Mathematical Physics.

Kyiv School of Economics, Kyiv, Ukraine
Closing date: 31 January 2025.

Humboldt research fellowship for postdoctoral researchers.

Alexander von Humboldt Foundation
Closing date: Open.

Tenured/Tenure-track position in Differential Geometry.

ShanghaiTech University, Shanghai, China
Closing date: 10 January 2025.

University Professor of Mathematical General Relativity.

University of Vienna, Vienna, Austria
Closing date: 10 January 2025.

Professor of Mathematics.

University of Alaska Fairbanks, Fairbanks(AK), United States of America
Closing date: 14 January 2025.

Associate Professor in Geometry and Dynamics.

Côte d'Azur University, Nice, France
Closing date: 15 May 2025.

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 Research 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

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.

Summer graduate schools at MSRI.

Mathematical Sciences Research Institute, Berkeley, United States.

Deadline: 1 December, 1 March, and 1 October every year.

Full- or half-year scientific programs.

Simons Laufer Mathematical Sciences Institute, Berkeley, United States.

Deadline: 1 December, 1 March, and 1 October every year.

Hot topic workshops.

Simons Laufer Mathematical Sciences Institute, Berkeley, United States.

Deadline: 1 December, 1 March, and 1 October every year.

Revisiting Fundamental Problems Workshop.

Simons Laufer Mathematical Sciences Institute, Berkeley, United States.

Deadline: 1 December, 1 March, and 1 October every year.

IMU Volunteer Lecturer Program.

Financial assistance to universities in developing countries to host a 3-4-week intensive course.

Deadline: 1 December 2024, 1 March 2025, and 1 September.

ICTP Mathematics Visiting Fellowships.

Grants for visits for a maximum period of 3 months.

Deadline: 31 December 2024.

Individual & Small Group Application in SLMath (MSRI).

On-Site Workshop in Berkeley, California. Dates: June 30 - July 11, 2025.

Deadline: 4 February 2025.

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 Forschungsinstitut Oberwolfach.

Oberwolfach, Germany.

Deadline: Open.

Targeted Grants in Mathematical and Physical Sciences.

Simons Laufer Mathematical Sciences Institute, Berkeley, United States.

Deadline: At any time.

Hosting a workshop at AIMS South Africa.

Contributions for workshops about AIMS's research focus areas.

Deadline: No precise deadline.

News and publications

Journals

Recent Mathematical and Theoretical Progress in Quantum Mechanics.

A special issue of "Frontiers in Physics" aims to promote research on open problems in quantum mechanics and foster idea exchange between related fields of theoretical and mathematical physics.

Deadline: 30 April 2025.

Journal Geometric Mechanics.

Published by World Scientific about applications of geometric methods in mechanics, dynamics, con-

trol, transport, stochastic processes, data science, and learning.

Deadline: No precise deadline.

Geometric methods in mechanics and physics.

Open-access sponsored by the International Research Center for Mathematics & Mechanics of Complex Systems Journal (Italy). On topics such as variational methods, numerical methods, and optimization techniques.

Deadline: No precise deadline.

Preprints

Network's members

Viviana Alejandra Díaz, Leandro Martín Salomone and Marcela Zuccalli: *Lagrangian neural networks for nonholonomic mechanics.*

2411.00110

[cs.LG, cond-mat.dis-nn, cs.ET, cs.NE]

Alexandre Anahory Simões, Anthony Bloch, Leonardo Colombo and Efstratios Stratoglou: *Geometric stabilization of virtual linear nonholonomic constraints.*

2411.01692

[math.OC]

Efstratios Stratoglou, Alexandre Anahory Simões, Anthony Bloch and Leonardo J. Colombo: *Non-holonomic mechanics and virtual constraints on*

Riemannian homogeneous spaces.

2411.05485

[math.OC]

I. Gutierrez-Sagredo, D. Iglesias Ponte, J. C. Marrero and E. Padrón: *Mechanical presymplectic structures and Marsden-Weinstein reduction of time-dependent Hamiltonian systems.*

2411.11997

[math.DG, math-ph, math.MP]

Alberto Enciso and Carlos Valero: *A Calderón Problem for Beltrami Fields.*

2411.12511

[math.AP, math.DG]

Network's collaborators

Katarzyna Grabowska and Janusz Grabowski: *Homogeneity supermanifolds and homogeneous Darboux theorem.*

2411.00537

[math.DG, math-ph, math.MP, math.SG]

Jean-Pierre Gazeau, Mariano A. del Olmo and Hamed Pejhan: *Matrix Elements and Characters of the Discrete Series ("Massive") Unitary Irreducible Representations of $Sp(4, R)$.*

2411.03031

[math-ph, math.GR, math.MP]

Boris Khesin, Gerard Misiołek and Klas Modin: *Information geometry of diffeomorphism groups.*

2411.03265 (version 2)

[math.DG, cs.IT, math-ph, math.IT, math.MP]

Simone Betteti, Giacomo Baggio, Francesco Bullo and Sandro Zampieri: *Input-Driven Dynamics for Robust Memory Retrieval in Hopfield Networks.*

2411.05849

[q-bio.NC, cond-mat.stat-mech, cs.AI, cs.LG, math.DS]

Amadeu Delshams and Piotr Zgliczynski: *Polynomial normal forms for ODEs near a center-saddle equilibrium point.*

2411.04600

[math.DS, math.CA]

J. S. Canovas: *A note on the periodic orbits of Wolbachia spread dynamics in mosquito populations in periodic environments.*

2411.05439

[math.DS, q-bio.PE]

Simone Betteti, Giacomo Baggio, Francesco Bullo and Sandro Zampieri: *Firing Rate Models as Associative Memory: Excitatory-Inhibitory Balance for Robust Retrieval.*

2411.07388

[q-bio.NC, cond-mat.dis-nn, cond-mat.stat-mech, cs.AI, math.DS]

Alejandro Bravo-Doddoli, Philip Arathoon and Anthony M. Bloch: *Integrable sub-Riemannian geodesic flows on the special orthogonal group.*

2411.09008

[math.DG, math.DS]

Linyu Peng and Hiroaki Yoshimura: *Discrete Dirac structures and discrete Lagrange-Dirac dynamical systems in mechanics.*

2411.09530

[math-ph, cs.NA, math.DG, math.DS, math.MP, math.NA]

R. Camassa, G. Falqui, G. Ortenzi, M. Pedroni and T. T. Vu Ho: *A Hamiltonian set-up for 4-layer density stratified Euler fluids.*

2411.15171

[physics.flu-dyn, math-ph, math.MP, physics.geoph]

Mark Hamilton, Yael Karshon and Takahiko Yoshida: *Integral-integral affine geometry, geometric quantization, and Riemann-Roch.*

2411.10348

[math.SG]

Amadeu Delshams, Mercè Ollé, Juan Ramon Pacha and Óscar Rodríguez: *Breakdown of homoclinic orbits to L_1 of the hydrogen atom in a circularly polarized microwave field.*

2411.10407

[math.DS]

A. Balmaseda, D. Krejcirik and J. M. Pérez-Pardo: *The relativistic rotated harmonic oscillator.*

2411.16494

[math.SP, math-ph, math.MP, quant-ph]

Sebastian J. Morris, Christopher J. Ho, Simon M. Fischer, Jiří Etrych, Gevorg Martirosyan, Zoran Hadzibabic and Christoph Eigen: *Scaling Laws Governing the Collapse of a Bose-Einstein Condensate.*

2411.19948

[cond-mat.quant-gas, math-ph, math.MP, nlin.PS, physics.plasm-ph, quant-ph]

Links of interest

Geometry, Dynamics and Field Theory Network

Journal “Geometric Mechanics”

International Mathematical Union (IMU) Newsletter - September 2024

Instituto de Ciencias Matemáticas (ICMAT) Newsletter - October 2024

International Association of Mathematical Physics Bulletin - October 2024

European Mathematical Society

Royal Spanish Mathematical Society (RSME)

International Association of Mathematical Physics

International Centre for Theoretical Physics (ICTP)

Association for Women in Mathematics (AWM)

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 American Institute of Mathematical Sciences (AIMS) Journal

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

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 Poincaré Prize

The British Royal Society Grants

The British Royal Society's medals and award

NOTE: If you want to include information in this info-sheet, please send it to gmcactivities@gmail.com