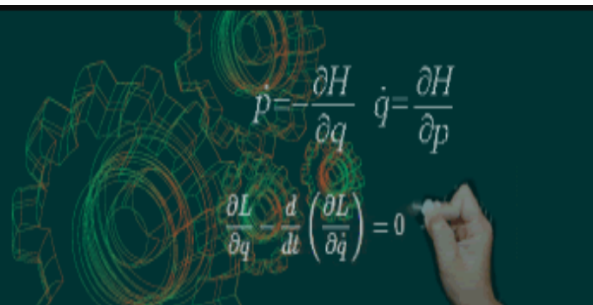# GMC Network

Geometry, Mechanics and Control Network Infosheet

July 2022

Editors: Viviana Díaz, Iván Gutiérrez, Rodrigo Sato

CONTENTS

Outstanding event

XXX International Fall Workshop on Geometry and Physics.
29 August–2 September 2022, Madrid, Spain.

Virtual seminars

Online Seminar of the Geometry, Mechanics and Control Thematic Network.
Instituto de Ciencias Matemáticas' seminars on these topics.

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

Virtual Seminar on Geometry with Symmetries.
On the topic of Lie group actions in Riemannian geometry.

Control and Optimization Seminar.
Louisiana State University.

Global Poisson Webinar.
CRM-Montreal, Princeton/IAS, Tel Aviv, and Paris Seminar.

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

Latin American Seminar on Differential Geometry.
Virtual seminar aims to establish contact with several research groups and mathematicians in Latin America.

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

ICMAT Geometry Seminar.
Instituto de Ciencias Matemáticas' seminars on algebraic and differential geometry.

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.

Conferences

Frontiers in Geometry and Topology Summer School.
1–5 August 2022, Trieste, Italy.

Frontiers in Geometry and Topology Conference.
8–12 August 2022, Trieste, Italy.

Symplectic and Contact Topology.
8–12 August 2022, Davis, USA.

Calculus of Variations.
14–20 August 2022, Oberwolfach, Germany.

Quantum Dynamics: From Electrons to Qbits.
22 August– 9 September 2022, Trieste, Italy.

25th International Summer School on Global Analysis and Applications.
22–26 August 2022, Ostrava, Czech Republic.

Integrability, Enumerative Geometry and Quantization.
22 August–23 September 2022, New York, USA.

Geometric Structures and Supersymmetry 2022.
23–26 August 2022, Tromsø, Norway.

Control and Optimization with Industrial Applications.
24–26 August 2022, Baku, Azerbaijan.

Connections Workshop: Analytic and Geometric Aspects of Gauge Theory.
25–26 August 2022, Berkeley, USA.

6th International Conference on Soft Computing, Mathematics and Control (Virtual Conference).
27–28 August 2022.

Introductory Workshop: Analytic and Geometric Aspects of Gauge Theory.
29 August–2 September 2022, Berkeley, USA.

Quantum Information in many body physics: a mathematical invitation.
29 August–2 September 2022, Munich, Germany.

Geometric Structures and Moduli Spaces.
29 August–2 September 2022, Córdoba, Argentina.

Applied Mathematical Challenges and Recent Advances in the Micro-Mechanics of Matter.
1–2 September 2022, Bristol, United Kingdom.

Topological Methods in Mathematical Physics.
2–6 September 2022, Erice, Italy.

Classical and Quantum Mechanical Models of Many-Particle Systems.
3–9 September 2022, Oberwolfach, Germany.

Nonlocal Problems in Mathematical Physics, Analysis and Geometry.
4–9 September 2022, Hangzhou, China.

Mathematical physics: new developments and perspectives.
4–5 September 2022, Paris, France.

Modern advances in geometric group theory.
5–9 September 2022, Manchester, United Kingdom.

Summer School on Phase-field Methods in Mechanics.
4–10 September 2022, Quiberon peninsula, France.

Higher Symmetry and Quantum Field Theory.
4–18 September 2022, Aspen, USA.

QMATH 15-Mathematical Results in Quantum Physics.
12–16 September 2022, California, USA.

Geometry, Stochastics and Dynamics.
12–19 September 2022, London, United Kingdom.

Generalized Global Symmetries, Quantum Field Theory, and Geometry.
19–23 September 2022, New York, USA.

Noncommutative Geometry and Noncommutative Invariant Theory.
25–30 September 2022, Banff, Canada.

Poisson Geometry and Artin-Schelter Regular Algebras.
25–30 September 2022, Banff, Canada.

Workshop on Complex Geometry and Geometric Group Theory.
26–30 September 2022, Karlsruhe, Germany.

Geometric Representation Theory, Integrability, and Supersymmetric Gauge Theories.
26–30 September 2022, New York, USA.

Quantization of Complex Symplectic Varieties.
2–8 October 2022, Oberwolfach, Germany.

New Four-Dimensional Gauge Theories.
24–28 October 2022, Berkeley, USA.

Computational Differential Geometry and it's Applications in Physics.
14–18 November 2022, New York, USA.

Lie Groups, Singular Spaces, and Higher Structures.
9–13 January 2023, Toronto, Canada.

Workshop on the Geometry and Dynamics of Groups of Transformations.
16–20 January 2023, Toronto, Canada.

Job offers, fellowships and supports

Ph.D. offers

Junior Researcher in Mathematics.
University of Coimbra, Portugal
Closing date: 4 August 2022.

PhD student in Differential Geometry and Geometric Mechanics.
University of Antwerp, Belgium
Closing date: 8 August 2022.

PhD position in Mathematical Finance and Economics.
Umea university, Umea, Sweden
Closing date: 14 August 2022.

PhD Position on speed forecasting.
Utrecht University, Utrecht, The Netherlands
Closing date: 15 August 2022.

PhD in Numerical Analysis of PDEs.
Monash University, Melbourne, Australia
Closing date: 15 August 2022.

PhD position in Financial Mathematics.
TU Wien, Wien, Austria
Closing date: 25 August 2022.

PhD position in Dynamical Systems.
TU Wien, Wien, Austria
Closing date: 1 September 2022.

Graduate scholarship in mathematics.
Nanyang Technological University, Nanyang, Singapore
Closing date: 30 December 2022.

PhD positions in Dynamics, Control and Numerics.
FAU Erlangen-Nurnberg, Erlangen, Germany
Closing date: 30 December 2022.

3 PhD positions in Geometry, Probability, and Deep Learning.
NTU Singapore, Singapore
Closing date: Open until filled.

PhD in stochastic geometric mechanics.
Wilfrid Laurier University, Waterloo, Canada
Closing date: Open until filled.

PhD positions.
TU Delft, Delft, The Netherlands
Closing date: Open until filled.

Postdoctoral fellowships

Junior researcher.
University of Coimbra, Coimbra, Portugal
Closing date: 4 August 2022.

Research fellow in numerical analysis.
Czech Academy of Sciences, Prague, Czech Republic
Closing date: 14 August 2022.

Postdoc positions in differential geometry.
University of Ljubljana, Ljubljana, Slovenia
Closing date: 18 August 2022.

Postdoctoral researcher in Mathematical Analysis.
Umea university, Umea, Sweden
Closing date: 30 August 2022.

Postdoc on Quantum Groups and Noncommutative Geometry.

Charles University in Prague, Prague, Czech Republic
Closing date: 9 September 2022.

Postdoc in Mathematical Biology.
CRM, Barcelona, Spain
Closing date: 21 September 2022.

Postdoctoral position in mathematics.
Nanyang Technological University, Nanyang, Singapore
Closing date: 30 December 2022.

Postdoctoral positions in Dynamics, Control and Numerics.
FAU Erlangen-Nurnberg, Erlangen, Germany
Closing date: 30 December 2022.

3 postdoc positions in Geometry, Probability, and Deep Learning.
NTU Singapore, Singapore
Closing date: Open until filled.

Postdoctoral fellowships in algebraic geometry and mathematical sciences.
Harvard University, Massachusetts, United States
Closing date: Open until filled.

Postdoctoral positions in Mathematics.
Einstein Institute of Mathematics, Jerusalem, Israel
Closing date: Open until filled.

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

Lisa Meitner program.
FWF Austrian Science Fund, Vienna, Austria
Closing date: Open.

Funded postdoctoral fellowship.
University of Reading, United Kingdom
Closing date: Open.

Offers for researchers

Full professor of Discrete Mathematics and Probability.
TU Graz, Graz, Austria
Closing date: 27 August 2022.

Tenure-track position.
University of Cyprus, Cyprus
Closing date: 28 August 2022.

Lecturer in the Department of Mathematics .
University of Hong Kong, Hong Kong
Closing date: 30 August 2022.

Associate Professor Position.
Nagoya University, Nagoya,Japan
Closing date: 31 August 2022.

Lecturer in the Department of Mathematics.
The University of Hong Kong, Hong Kong

Closing date: 31 August 2022.

Assistant Professor in Mathematical Analysis.
Bocconi University, Milan, Italy
Closing date: 11 September 2022.

Research Professor.
KU Leuven, Leuven, Belgium
Closing date: 14 September 2022.

Full Professor Position.
Nagoya University, Nagoya,Japan
Closing date: 20 September 2022.

W3 professorship in Algebra or Discrete Mathematics.
Georg August University of Göttingen, Göttingen, Germany
Closing date: 30 September 2022.

Offers for visiting researchers

CIMPA-ICTP Research in Pairs for mathematicians in developing countries.
CIMPA in Côte d'Azur or ICTP in Trieste, Italy) .
For periods of at least 6 weeks.
Closing date: 1 July.

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

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 for research projects and conferences

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

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

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

CIMPA School 2024.
For organizing research schools in mathematics in developing countries.
Deadline: 9 October.

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.

International Mathematical Union - Conference support program.
For conferences in developing or economically disadvantaged countries.
Deadline: Several calls.

Interesting publications

Volume: 13th Young Researchers Workshop on Geometry, Mechanics and Control. **Mathematical Texts of the University of Coimbra.**
Number 48, 2019.
Three mini-courses.

Online, free access.

Editors: Maria Barbero-Liñán, Margarida Camarinha, Raquel Caseiro, Leonardo Colombo, and Joana Nunes da Costa.

Preprints

Network's members

J. Fernando Barbero González, Marc Basquens, Bogar Díaz and Eduardo J. S. Villaseñor: *Poisson brackets in Sobolev spaces: a mock holonomy-flux algebra.*
2207.00342
[math-ph, gr-qc, math.MP]

A. Bautista, A. Ibort, J. Lafuente and R. Low: *A conformal boundary for space-times based on light-like geodesics: the 3-dimensional case.*
2207.01273
[gr-qc, math-ph, math.MP]

Alexandre Anahory Simões, Efstratios Stratoglou, Anthony Bloch and Leonardo J. Colombo: *Virtual Nonholonomic Constraints: A Geometric Approach.*
2207.01299
[eess.SY, cs.SY, math.OC]

Paula Balseiro, María E. García, Cora Tori and Marcela Zuccalli: *Momentum map reduction for nonholonomic systems.*
2207.02251
[math-ph, math.DG, math.MP]

Víctor M. Jiménez and Manuel de León: *A geometric model for non-uniform processes of morphogenesis.*
2207.03252
[math-ph, math.DG, math.MP]

Marco Castrillón López and Álvaro Rodríguez Abella: *Higher order jet bundles of Lie group-valued functions.*
2207.03284
[math.DG]

Zhenyi Yuan, Changhong Zhao and Jorge Cortés: *Reinforcement Learning for Distributed Transient Frequency Control with Stability and Safety Guarantees.*
2207.03329
[eess.SY, cs.SY, math.OC]

Javier de Lucas and Xavier Rivas: *Contact Lie systems.*

2207.04038
[math-ph, math.DG, math.MP, nlin.SI]

I. Gutiérrez-Sagredo, D. Iglesias Ponte, J. C. Marrero, E. Padrón and Z. Ravanpak: *Unimodularity and invariant volume forms for Hamiltonian dynamics on Poisson-Lie groups.*
2207.05511
[math.DG, math-ph, math.DS, math.MP]

Efstratios Stratoglou, Alexandre Anahory Simões and Leonardo J. Colombo: *Reduction in optimal control with broken symmetry for collision and obstacle avoidance of multi-agent system on Lie groups.*
2207.06806
[math.OC, cs.SY, eess.SY]

Masih Haseli and Jorge Cortés: *Temporal Forward-Backward Consistency, Not Residual Error, Measures the Prediction Accuracy of Extended Dynamic Mode Decomposition.*
2207.07719
[eess.SY, cs.LG, cs.SY, math.DS]

Florio M. Ciaglia, Fabio Di Cosmo, Alberto Ibort and Giuseppe Marmo: *G-dual teleparallel connections in Information Geometry.*
2207.08694
[math-ph, cs.IT, math.IT, math.MP, quant-ph]

Cezary Gonera, Joanna Gonera, Javier de Lucas, Wioletta Szczesek and Bartosz Zawora: *More on superintegrable models on spaces of constant curvature.*
2207.08935
[nlin.SI, math-ph, math.MP]

Jacob R. Goodman and Leonardo J. Colombo: *Reduction by Symmetry in Obstacle Avoidance Problems on Riemannian Manifolds.*
2207.13574
[math.OC, cs.SY, eess.SY, math.DS, math.MG]

Network's collaborators

Ezzat Elokda, Saverio Bolognani, Andrea Censi, Florian Dörfler and Emilio Frazzoli: *A self-contained karma economy for the dynamic allocation of common resources.*
2207.00495
[econ.TH, cs.GT, cs.SY, eess.SY, math.OC]

Giuseppe Gaeta and Miguel Angel Rodriguez: *Symmetry classification of scalar autonomous Ito stochastic differential equations with simple noise.*
2207.02780
[math-ph, math.MP, math.PR]

Francesco Fassò and Nicola Sansonetto: *On some aspects of the dynamics of a ball in a rotating surface of revolution and of the kasamawashi art.*
2207.02048
[math-ph, math.DS, math.MP, math.OC, nlin.CD, nlin.SI]

Richard Montgomery: *Dropping Bodies.*
2207.02582
[math.DS]

Katarzyna Grabowska and Janusz Grabowski: *A novel approach to contact Hamiltonians and contact Hamilton-Jacobi theory.*
2207.04484
[math.SG, math-ph, math.DG, math.MP]

Clara Cufí-Cabré and Jaume Llibre: *Limit cycles of linear vector fields on $(\mathbb{S}^2)^m \times \mathbb{R}^n$.*
2207.07006
[math.DS]

Jose S. Cánovas and Houssem Eddine Rezgui: *Revisiting the dynamic of Q-deformed logistic maps.*
2207.07398
[math.DS]

Chengming Bai, Li Guo, Guilai Liu and Tianshui Ma: *Rota-Baxter Lie bialgebras, classical Yang-Baxter equations and special L-dendriform bialgebras.*
2207.08703

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

Boris Khesin and Klas Modin: *The Toda flow as a porous medium equation.*
2207.10214
[math.DS, math.DG, nlin.SI]

A. Alonso-Izquierdo, D. Miguélez-Caballero, L. M. Nieto and J. Queiroga-Nunes: *Wobbling kinks in a two-component scalar field theory: Interaction between shape modes.*
2207.10989
[hep-th, math-ph, math.MP, nlin.PS]

Elena Celledoni, Helge Glöckner, Jørgen Riseth and Alexander Schmeding: *Deep learning of diffeomorphisms for optimal reparametrizations of shapes.*
2207.11141
[math.OC, cs.LG, math.DG]

Valentin Duruisseaux and Melvin Leok: *Practical Perspectives on Symplectic Accelerated Optimization.*
2207.11460
[math.OC]

İsmail Burak Ateş, Şengül Kuru and Javier Negro: *Confinement of graphene Dirac fermions in electric and magnetic fields with displacement symmetry in one direction.*
2207.12001
[math-ph, math.MP]

Felix Finster, Niky Kamran and Moritz Reintjes: *Entangled Quantum States of Causal Fermion Systems and Unitary Group Integrals.*
2207.13157
[math-ph, hep-th, math.MP, math.OA, quant-ph]

Vincenzo Morinelli, Karl-Hermann Neeb and Gestur Olafsson: *From Euler elements and 3-gradings to non-compactly causal symmetric spaces.*
2207.14034
[math-ph, math.DG, math.MP]

Links of interest

Geometry, Mechanics and Control Network

Journal of Geometric Mechanics - June 2022, Volume 14, Issue 2

International Mathematical Union (IMU) Newsletter - May 2022

International Association of Mathematical Physics Bulletin - April 2022

European Mathematical Society

Royal Spanish Mathematical Society (RSME)

International Association of Mathematical Physics

Open Access American Institute of Mathematical Sciences (AIMS) Journal

Euraxess Spain

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 Group on Control and Systems Theory Prize

SIAM Activity Group on Control and Systems Theory Best SICON Paper Prize

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

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