
Alfonso Garmendia

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Interests

Singular Foliations theory, Symplectic Geometry, Poisson geometry, Lie theory (groups, algebras, groupoids and algebroids), non commutative geometry, PDE, geometric analysis, deformation quantization and applications in physics.

Positions

2025–now Postdoc, MPIM, Bonn.
2024–2025 Professor, UManresa, Spain.
2022–2024 Senior Postdoc MdM, GEOMAP, Prof. Eva Miranda, CRM Barcelona, Spain.
2019–2021 Postdoc, Analysis group, Prof. Sylvie Paycha, Universität Potsdam, Germany
2015–2019 Researcher as PhD. Student, KU LEUVEN, Belgium.
2010–2015 Professor, Universidad Central de Venezuela, Venezuela.
2007–2010 Exercise session assistant, Universidad Central de Venezuela, Venezuela.

Education

2015–2019 PhD. Mathematics, KU LEUVEN, Belgium.
Thesis: Groupoids and singular foliations.
Advisor: Marco Zambon
2010–2015 M.Sc. Mathematics, Universidad Central de Venezuela, Venezuela.
(the 3 year program became 5 because of the unrest situation in Venezuela)
Thesis: Functorial quantization.
Adviser: Mauricio Angel.
2005–2010 B.Sc. Mathematics, Universidad Central de Venezuela, Venezuela.
Thesis: Study of differential equations using geometric methods.
Adviser: Mauricio Angel.

Languages

Spanish (native), English (fluent), French and German (advanced), Catalan (intermediate) and Dutch (basic).

RESEARCH

Publications

1. G,A. and Paycha, S: “**Principal bundle groupoids, their gauge group and their nerve**”. Journal of Geometry and Physics. doi.org/10.1016/j.geomphys.2023.104865. Sept 2023.
2. G, A. and Villatoro, J.: “**Integration of singular foliations via paths**”. International Mathematics Research Notices. https://doi.org/10.1093/imrn/rnab177. Sept 2021
3. G, A. and Zambon, M.: “**Quotients of singular foliations and Lie 2-group actions**” J. Noncommut. Geom. 15, no. 4, pp. 1251.1283. Dec 2021.
4. G, A and Yudilevich, O. “**On the inner automorphisms of a singular foliation**”. Mathematische Zeitschrift, 293(1):725.729. Oct 2019.
5. G, A. and Zambon, M.: “**Hausdorff Morita equivalence of singular foliations**”. Annals of Global Analysis and Geometry, 55(1):99–132. Feb 2019.

Preprints

1. G,A and Miranda, E: “**E-symplectic vs almost regular Poisson**”. arXiv:2410.11641 Oct 2024.
2. G,A and Cataffi, F: “**PB-groupoids vs VB-groupoids**”. arXiv:2406.06259 Jun 2024.
3. G, A.: “**Groupoids and singular foliations**”. PhD Thesis, KU Leuven arXiv.2107.10502. Jul 2019.

Work in progress

1. G,A and Ryvkin, L: “**Entreplots diffeological groupoids and its induced singular foliation**”.

Selected list of talks

- 2024-March E-symplectic and almost regular Poisson**
Geometry in Timisoara, West University of Timișoara, ROMANIA.
- 2023-July Integration of E-Poisson manifolds**
IHP, Singular foliations and Dg-manifolds, Paris, FRANCE.
- 2023-Jan Groupoids and Deformation quantization**
44th Winter school geometry and physics. Srni, CZECH REPUBLIC.
- 2022-July Principal Bundle Groupoids and Gerbes**
CRM Poisson Days. Barcelona, SPAIN.
- 2021-Sept Path integration of singular foliation**
Meeting on groupoids, Poisson and integration, Wolfgang Pauli Institute. Vienna, AUSTRIA.
- 2020-Oct Path groupoid of a singular foliation**
Workshop: Koszul duality and Operads, CIRM. Marseille, FRANCE.
- 2019-Sep Quotients and Groupoids Fibrations**
Academic visit, Università degli Studi di Salerno. Salerno, ITALY.
- 2019-May Quotients of singular foliations and Lie 2-groups**
Workshop on Singular Foliations, KU Leuven. Leuven, BELGIUM.
- 2018-Oct Groupe de travail: “Feuilletages singuliers”**
Université Paris Diderot. Paris, FRANCE.
- 2017-Aug Hausdorff Morita equivalence of singular foliations**
Conference: “PADGE 2017”, KU Leuven. Leuven, BELGIUM.

TEACHING

Lectures

2024-Fall	“Matemàtiques”, “Anàlisi de dades” undergraduate course, UManresa, Spain.
2015-Spring	“Algebra II” undergraduate course, UCV, Venezuela.
2014-Fall	“Matemáticas I” undergraduate course, UCV, Venezuela.
2014-Spring	“Algebra I” undergraduate course, UCV, Venezuela.
2013-Fall	“Elementos de la matemática” undergraduate course, UCV, Venezuela.
2013-Spring	“Matemáticas II” undergraduate course, UCV, Venezuela.
2012-Fall	“Elementos de la matemática” undergraduate course, UCV, Venezuela.
2012-Spring	“Matemáticas II” undergraduate course, UCV, Venezuela.
2011-Fall	“Elementos de la matemática” undergraduate course, UCV, Venezuela.
2011-Spring	“Matemáticas I” undergraduate course, UCV, Venezuela.
2010-Fall	“Matemáticas I” undergraduate course, UCV, Venezuela.

Exercise sessions

2021-Spring	“Gauge Theory” undergraduate course, Universität Potsdam.
2021-Spring	“Mathematics for physicist II” undergraduate course, Universität Potsdam.
2020-Fall	“Mathematics for physicist I” undergraduate course, Universität Potsdam.
2020-Spring	“Heat Kernel” master course, Universität Potsdam.
2020-Spring	“Mathematics for physicist IV” undergraduate course, Universität Potsdam.
2019-Fall	“Mathematics for physicist III” undergraduate course, Universität Potsdam.
2018-Fall	“Differential Geometry” master course, KU Leuven.
2018-Fall	“Calculus en Analyse” undergraduate course, KU Leuven.
2018-Spring	“G-Structures” master course, KU Leuven.
2017-Fall	“Calculus en Analyse” undergraduate course, KU Leuven.
2016-Fall	“Calculus en Analyse” undergraduate course, KU Leuven.
2015-Fall	“Calculus en Analyse” undergraduate course, KU Leuven.
2010-Spring	“Matemáticas I” & “Matemáticas III” undergraduate courses, UCV.
2009-Fall	“Matemáticas I” & “Matemáticas III” undergraduate courses, UCV.
2009-Spring	“Matemáticas II” undergraduate course, UCV.
2008-Fall	“Matemáticas I” undergraduate course, UCV.
2008-Spring	“Matemáticas II” undergraduate course, UCV.
2007-Fall	“Matemáticas I” undergraduate course, UCV.

Part of the organization in the events

2021-Feb	International Online Conference: Microlocal and Global Analysis, Interactions with Geometry , together with Prof. Sylvie Paycha. Universität Potsdam. Potsdam, GERMANY.
2020-Oct	Virtual Workshop for Young Researchers: Singular Foliations and Related Structures , together with Leonid Ryvkin. Universität Potsdam and Universität Duisburg Essen, GERMANY.
2020-Feb	International Conference: Microlocal and Global Analysis, Interactions with Geometry , together with Prof. Sylvie Paycha. Universität Potsdam. Potsdam, GERMANY.
2019-May	Workshop on Singular Foliations , together with Ori Yudilevich and Prof. Marco Zambon. KU Leuven. Leuven, BELGIUM.
2018-Jul	Exposition of portraits: “Woman of Mathematics” Science Library of KU Leuven. Leuven, BELGIUM.
2017-Jun	“Forth Young Mathematicians Colloquium” Vrije Universiteit Brussels. Brussels, BELGIUM.

Learning Seminars organized

Oct 2020- -Jan 2023	Webinar: “Good Morning SFARS”, together with Leonid Ryvkin. Universität Potsdam and Universität Duisburg Essen, GERMANY.
2020-Fall	“On integrability of Lie brackets”, together with Sylvie Paycha. Universität Potsdam.
2020-Spring	“On Index theory and Deformation quantization”, together with Mehran Seyedhosseini. Universität Potsdam.

Advising

Malte Leimbach	I was his co-adviser with Prof. Sylvie Paycha since October 2020 for a Master thesis on Freie Universität Berlin on differential operators for foliations, from Oct 2020 till July 2021.
Nicola de Feo	I was his informal host of an Erasmus exchange program at KU Leuven. We worked together with Prof. Marco Zambon on representations and integrability of Lie algebras from March till June 2018.

Teaching Training

2017-Feb	Faculty educational program for PhD students KU Leuven. Leuven, BELGIUM.
2011-Feb	Workshop: “1er Taller de experiencia docente” Universidad central de Venezuela. Caracas, VENEZUELA.

REFERENCES

Eva Miranda: UPC Barcelona, Spain.

email: eva.miranda@upc.edu

Leonid Ryvkin: Université Claude Bernard Lyon 1, France.

email: leonid@ryvkin.eu

Sylvie Paycha: Universität Potsdam, Germany.

email: paycha@math.uni-potsdam.de

Marco Zambon: KU Leuven, Belgium.

email: marco.zambon@kuleuven.be