

Andrea Galasso | Curriculum vitae

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Recent positions

Università degli Studi di Milano-Bicocca

Postdoctoral Researcher

Milan, Italy

October 2022 – September 2026

From 12/07/2023 to 12/08/2023 at Mathematics Institute of the Universität zu Köln founded by

“Borsa per l'estero dell'Istituto Nazionale di Alta Matematica (INdAM)”

From 27/04/2024 to 27/05/2024 visiting stay at Academia Sinica (Taipei)

National Center for Theoretical Sciences

Postdoctoral Researcher

Taipei, Taiwan

March 2020 – August 2022

From 01/08/2022 to 31/08/2022 at Bergische Universität Wuppertal, Germany

Università degli Studi di Milano-Bicocca

Postdoctoral Researcher (Progetto ID 2018-ATESP-066)

Milan, Italy

March 2019 – February 2020

Research interests

My research interests concern the interface of geometric representation theory, harmonic analysis, symplectic geometry and Cauchy–Riemann geometry, especially with application to the theory of Geometric Quantization and its generalizations and variants. My main focus is on the interplay between the geometry of the moment map of a Hamiltonian group action and the asymptotics of certain unitary representations that arise when one ‘quantizes’ the action. In my research I have made extensive use of techniques from Complex and Microlocal Analysis.

Preprints

- (with Chin-Yu Hsiao) *Quantization and reduction for torsion free CR manifolds*
preprint: arXiv:2411.00478
- *Strict quantization for compact pseudo-Kähler manifolds and group actions*
preprint: arXiv:2410.03322

Publications

- (with Chin-Yu Hsiao) *On the singularities of the Szegő kernels on CR orbifolds*
Journal of Geometry and Physics
DOI: <https://doi.org/10.1016/j.geomphys.2024.105411>
- (with Chin-Yu Hsiao) *Embedding theorems for quantizable pseudo-Kähler manifolds*
Bollettino dell'Unione Matematica Italiana
DOI: <https://doi.org/10.1007/s40574-024-00445-4>
- (with Chin-Yu Hsiao) *Functional calculus and Quantization commutes with reduction for Toeplitz operators on CR manifolds*
Mathematische Zeitschrift 308, 5 (2024)
DOI: <https://doi.org/10.1007/s00209-024-03561-1>
- *Remarks on asymptotic isometric embeddings of conic transforms for torus actions*
Rendiconti del Circolo Matematico di Palermo Series, II. Ser 73, 1513–2526 (2024)
DOI: <https://doi.org/10.1007/s12215-024-01053-z>
- *Commutativity of quantization with conic reduction for torus actions on compact CR manifolds*
Annals of Global Analysis and Geometry 65, 4 (2024)
DOI: <https://doi.org/10.1007/s10455-023-09931-y>

- *Remarks on star products for non-compact CR manifolds with non-degenerate Levi form*
Bulletin of the Institute of Mathematics Academia Sinica 18, 3 (2023)
DOI: <https://doi.org/10.21915/BIMAS.2023303>
- (with Chin-Yu Hsiao) *Toeplitz operators on CR manifolds and group actions*
The Journal of Geometric Analysis 33, 21 (2023)
DOI: <https://doi.org/10.1007/s12220-022-01078-9>
- *Equivariant fixed point formulae and Toeplitz operators under Hamiltonian torus actions and remarks on equivariant asymptotic expansions*
International Journal of Mathematics 33, 2 (2022)
DOI: <https://doi.org/10.1142/S0129167X22500112>
- (with Roberto Paoletti) *Equivariant Asymptotics of Szegő kernels under Hamiltonian $SU(2)$ -actions*
Asian Journal of Mathematics 24, 3 (2020)
DOI: <https://doi.org/10.4310/AJM.2020.v24.n3.a6>
- (with Roberto Paoletti) *Equivariant Asymptotics of Szegő kernels under Hamiltonian $U(2)$ -actions*
Annali di Matematica Pura e Applicata 198, 2 (2019)
DOI: <https://doi.org/10.1007/s10231-018-0791-3>
- (with Mauro Spera) *Remarks on the geometric quantization of Landau levels*
International Journal of Geometric Methods in Modern Physics 13, 10 (2016)
DOI: <https://doi.org/10.1142/S021988781650122X>

Conference proceedings

- (with Roberto Paoletti) *Hamiltonian $U(2)$ -actions and Szegő kernel asymptotics*
IOP Conf. Series: Journal of Physics: Conf. Series, Vol. 1194 (2019)
DOI: <https://doi.org/10.1088/1742-6596/1194/1/012035>

Education

Università degli Studi di Pavia & Milano-Bicocca <i>Ph.D. in Mathematics, Date of Defense: 14th of December 2018 (Milano-Bicocca)</i> Thesis: <i>Non Abelian Asymptotics of Szegő Kernels on Compact Quantized Manifolds</i> Advisor: Prof. Roberto Paoletti I have spent 3 months at Université du Luxembourg under the supervision of Prof. Martin Schlichenmaier	Milan, Italy Nov 2015 – Oct 2018
Università Cattolica del Sacro Cuore <i>Master's Degree in Mathematics with highest score cum laude</i> Thesis: <i>Geometric Quantization and Landau Levels</i> Advisor: Prof. Mauro Spera, Co-Advisor: Prof. Giuseppe Nardelli	Brescia, Italy Oct 2013 – Jul 2015
Università Cattolica del Sacro Cuore <i>Bachelor's Degree in Mathematics with highest score cum laude</i> Thesis: <i>Two different approaches to tunneling problems</i> Advisor: Prof. Fausto Borgonovi, Co-Advisor: Prof. Giulio Giusteri	Brescia, Italy Sep 2010 – Sep 2013

Selected conference and seminar talks

17-20 December 2024: Title: Quantization and Reduction for CR Line Bundles
 2024 Taipei conference on geometry and quantization (National Center for Theoretical Sciences, Taiwan)
<https://sites.google.com/view/geoquant2024/>

14 November 2024: Title: Quantization Commutes with Reduction on CR Manifolds
 Università degli Studi di Milano-Bicocca, Italy

01 August 2023: Title: Star products on CR manifolds
 Mathematics Institute of the Universität zu Köln, Germany

18 August 2022: Title: Berezin-Toeplitz quantization on CR manifolds
 Bergische Universität Wuppertal, Germany

24 July 2022: Title: *Toeplitz operators on CR manifolds*

Short talk in *HAYAMA Symposium on Complex Analysis in Several Variables XXIII*

<https://sites.google.com/view/hayama-scv/2022?authuser=0>

10 March 2022: Title: *Functional calculus and quantization commutes with reduction*

Academia Sinica, Taipei

https://www.math.sinica.edu.tw/www/seminar/abstract_view_e.jsp?seminar_id=5143

14 Dec 2021: Title: *Toeplitz operators on CR manifolds and group actions*

Università Cattolica del Sacro Cuore, Brescia

<https://brescia.unicatt.it/evt-toeplitz-operators-on-cr-manifolds-and-group-actions>

30 Sep 2021: Title: *Toeplitz operators on CR manifolds and group actions*

Seminar in Academia Sinica, Taipei

https://www.math.sinica.edu.tw/www/seminar/abstract_view_e.jsp?seminar_id=5057

09 Aug 2021: Title: *Toeplitz operators on CR manifolds and group actions*

Short talk in GEOQUANT 2021 Geometry & Quantization International Conference,

<http://home.mathematik.uni-freiburg.de/GEOQUANT2021/conference/Program.html>

1 May 2021: Title: *G-Invariant Toeplitz operators on CR manifolds*

21-st Taiwan Geometry Symposium

<https://sites.google.com/view/21st-symposium/>

27-30 Apr 2021: Title: *Nuclei di Szegő e azioni di gruppi*

Giornate di Geometria Algebrica e argomenti correlati XV

<http://users.mat.unimi.it/users/alzati/gargnano2020/index.html>

22 April 2020: Title: *Asymptotic expansions in geometry and quantization*

Taipei Postdoc Seminar

www.math.sinica.edu.tw/www/file_upload/conference/2016TPS/index.html

12 February 2020: Title: *Equivariant asymptotics of Szegő kernels under Hamiltonian $SU(2) \times S^1$ -actions*

Talk as part of Progetto ID 2018-ATESP-066

13 September 2019: Title: *Equivariant asymptotics of Szegő kernels*

Short talk for the conference GEOQUANT 2019 in Taiwan

<http://math.uni.lu/geoquant2019/>

20 March 2018: Title: *Equivariant Asymptotics of Szegő kernels under Hamiltonian $U(2)$ -actions*

Research seminar for the Working Group Algebra, Geometry and Quantization, Université du Luxembourg

Teaching experience

.....At Università Cattolica del Sacro Cuore.....

***Istituzioni di Geometria Superiore* (Teaching Assistant)**

Hours: 15+15

Master's Degree in Mathematics

A.Y. 2018/2019 & 2019/2020

Teacher: Prof. Mauro Spera

.....At Università degli Studi di Milano-Bicocca.....

***Algebra Lineare e Geometria* (Teaching Assistant)**

Hours: 24+ 24+24

Bachelor's Degree in Mathematics

A.Y. 2022/2023, 2023/2024 & 2024/2025

Teacher: Prof. Michele Rossi

***Algebra Lineare e Geometria* (Teaching Assistant)**

Hours: 24+24

Bachelor's Degree in Mathematics

A.Y. 2016/2017 & 2017/2018

Teacher: Prof. Sonia Brivio

***Geometria II* (Tutoring)**

Hours: 30

Bachelor's Degree in Mathematics

A.Y. 2015/2016

Teacher: Prof. Roberto Paoletti

***General Mathematics* (Tutoring)**

Hours: 26 + 16

Bachelor's Degree in Scienze dell'Organizzazione (SCOR)

A.Y. 2015/2016 & 2017/2018

Teacher: Prof. Marina Pireddu

Other Projects and Organization Activity

9-10 Sept. 2024: Organization of the conference "Geometria in Bicocca 2024"

<https://geometryinbicocca.matapp.unimib.it/>

April 19 2024: "Matematica oltre i banchi", poster "Tassellazioni del piano - Da Escher al tassello Einstein"

<https://www.matapp.unimib.it/it/terza-missione/matematica-oltre-banchi>

March - April 2024: "Representation varieties and quantization of Chern-Simons theory", Course for Ph-D-students at Università degli Studi di Milano-Bicocca with Gianluca Faraco

<https://sites.google.com/view/jointphd/courses?authuser=0>

11-12 Sept. 2023: Organization of the conference "Geometria in Bicocca 2023"

<https://geometryinbicocca.matapp.unimib.it/>

Feb.-May 2023: Organization of a biweekly seminar cycle "Geometry & Topology seminars at Unimib" with Gianluca Faraco. The seminar cycle concerns research talks by Postdocs and early researchers in Mathematics

<https://sites.google.com/unimib.it/geometryatbicocca>

2016-2018: Organization of the seminar cycle "*Insalate di Matematica*", promoted by Dept. of Mathematics and Applications, Università degli Studi di Milano-Bicocca

The seminar cycle concerns informal talks by Ph.D. Students and early researchers in Mathematics

2017-2018: Percorso formativo per l'acquisizione dei 24 crediti nelle discipline antropo-psico-pedagogiche e nelle metodologie e tecnologie didattiche

Mar. 2017: Book's chapter: "*Elogio della mente a Brescia*" in *Alice & Bob* n. 49, I Giochi di Martin Gardner

20 October 2017: Popularization's talk for "Celebration of Mind" having title "*Piastrelle Pentagonali*", Università Cattolica del Sacro Cuore, Brescia

<http://elogiodellamente.dmf.unicatt.it/2017/index.html.it>

Jan. 2015-2016: "Chiedi all'esperto", as a part of a group of experts trying to answer questions about people's scientific curiosity

<https://www.vialattea.net/content/home-ce/>

Jan. 2013-2020: Training lessons for Mathematics competitions

<http://www.disfida.it/allenamenti/>

Other work experiences

I.I.S.S. C.Golgi, Via Rodi, 16 - Brescia

Secondary School Teacher

Oct 2018 – February 2019

AmbienteParco impresa sociale S.r.l., Largo Torrelunga, 7 - 25121 Brescia

Scientific popularizer

2012/2015

Language skills

Italian (mother tongue), **English**, **Mandarin Chinese** (Basic)

Computer skills

Languages: C, $\text{\LaTeX}$.

Further information

Memberships

Ist. Naz. di Alta Matematica F. Severi

Member of the INdAM-GNSAGA group

Scholarships and prizes

Premio Don Bartolomeo Grazioli

Prize for Master's Degree Thesis

2015

Borsa di Studio “Maria Teresa Ambrosetti”
Mathematics Scholarship

2011/2015

..... **Other activities**

Reviewer for ZbMATH, <https://zbmath.org/>