

Personal data

Date of birth: December 23th, 1989

Place of birth: Trani, Italy

Positions

Feb. 2023 - **Profesor Ayudante Doctor**, *Departamento de Matemática e Informática Aplicadas a la Ingeniería Civil y Naval*, Universidad Politécnica de Madrid, Madrid, Spain
Today

Oct.. 2021 - **Profesor Ayudante Doctor**, *Departamento de Matemática Aplicada y Ciencias de la Computación*, Universidad de Cantabria, Santander, Spain
Feb. 2023

Oct. 2018 - **Postdoctoral Fellow**, *CEREMADE & Université Paris-Dauphine*, Paris, France
Oct. 2021 Under the supervision of Prof. *Mathieu Lewin*.

Dec. 2017- **Postdoctoral Fellow**, *BCAM - Basque Center for Applied Mathematics*, Bilbao, Spain
Oct. 2018 Under the supervision of Prof. *Luis Vega*.

Education

2014–2017 **Ph.D. in Mathematics**, *BCAM - Basque Center for Applied Mathematics*, Spain

2013–2014 **Master's Degree in Mathematics**, *Università degli studi di Bari*, Italy

2008–2012 **Bachelor's Degree in Mathematics**, *Università degli studi di Bari*, Italy

Thesis

PhD Thesis

Title *Singular perturbations for the Dirac Hamiltonian.*

Supervisor Prof. Luis Vega González.

Master's Thesis

Title *Linear and non-linear damped wave equations.*

Supervisors Prof. Sandra Lucente and Prof. Michael Reissig.

Bachelor's Thesis

Title *Spectral theorem for compact operators and applications to PDEs.*

Supervisor Prof. Lorenzo D'Ambrosio.

Publications

- 2023 **J. Dolbeault, D. Gontier, F. Pizzichillo, H. Van Den Bosch, Keller and Lieb-Thiering estimates of the eigenvalues in the gap of Dirac operators**, *Revista Matemática Iberoamericana*
doi:10.4171/rmi/1443
- 2022 **M. Gallone, B. Cassano, F. Pizzichillo**, *Dirac-Coulomb operators with infinite mass boundary conditions in sectors*, *Journal of Mathematical Physics*,
doi:10.1063/5.0089526
- 2021 **F. Pizzichillo, H. Van Den Bosch**, *Self-Adjointness of two dimensional Dirac operators on corner domains*, *Journal of Spectral theory*
doi:10.4171/jst/365
- 2021 **T. Ourmières-Bonafos, F. Pizzichillo**, *Dirac operators and shell interactions: a survey*, *Mathematical Challenges of Zero-Range Physics. Springer INdAM Series*
doi: 10.1007/978-3-030-60453-0_5
- 2020 **B. Cassano, F. Pizzichillo, L. Vega**, *A Hardy-type inequality and some spectral characterizations for the Dirac-Coulomb operator*, *Revista Matemática Complutense*
doi: 10.1007/s13163-019-00311-4
- 2019 **B. Cassano, F. Pizzichillo**, *Boundary triples for the Dirac operator with Coulomb-type spherically symmetric perturbations*, *Journal of Mathematical Physics*
doi: 10.1063/1.5063986.
- 2018 **B. Cassano, F. Pizzichillo**, *Self-Adjoint Extensions for the Dirac Operator with Coulomb-Type Spherically Symmetric Potentials*, *Letters in Mathematical Physics*
doi: 10.1007/s11005-018-1093-9
- 2018 **A. Mas, F. Pizzichillo**, *Klein's Paradox and the Relativistic δ -shell Interaction in \mathbb{R}^3* , *Analysis and PDE*
doi: 10.2140/apde.2018.11.705
- 2018 **T. Ourmières-Bonafos, K. Pankrashkin, F. Pizzichillo**, *Spectral asymptotics for δ -interactions on sharp cones*, *Journal of Mathematical Analysis and Applications*
doi: 10.1016/j.jmaa.2017.09.026
- 2017 **A. Mas, F. Pizzichillo**, *The relativistic spherical δ -shell interaction in \mathbb{R}^3 : spectrum and approximation*, *Journal of Mathematical Physics*
doi: 10.1063/1.5000381

Teaching Experience

- 2023/24 **Cálculo II**, *Grado en Ingeniería Civil y Territorial*, Universidad Politécnica de Madrid, Madrid, Spain
- 2023/24 **Ecuaciones diferenciales**, *Grado en Ingeniería Civil y Territorial*, Universidad Politécnica de Madrid, Madrid, Spain
- 2022/23 **Estadística y Optimización**, *Grado en Ingeniería Civil y Territorial*, Universidad Politécnica de Madrid, Madrid, Spain
- 2022/23 **Cálculo I**, *Grado en Ingeniería Eléctrica*, Universidad de Cantabria, Santander, Spain

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- 2022/23 **Cálculo I**, *Grado en Ingeniería Electrónica*, Universidad de Cantabria, Santander, Spain
- 2022/23 **Cálculo I**, *Grado en Ingeniería de Telecomunicación*, Universidad de Cantabria, Santander, Spain
- 2021/22 **Ampliación de Matemáticas**, *Grado en Ingeniería de Recursos Mineros y Energéticos*, Universidad de Cantabria, Santander, Spain
- 2021/22 **Cálculo I**, *Grado en Ingeniería Eléctrica*, Universidad de Cantabria, Santander, Spain
- 2021/22 **Cálculo I**, *Grado en Ingeniería Electrónica*, Universidad de Cantabria, Santander, Spain
- 2021/22 **Cálculo I**, *Grado en Ingeniería de Telecomunicación*, Universidad de Cantabria, Santander, Spain
- 2020/21 **Mathematiques**, *Licence Science des Organisations*, Université Paris Dauphine, Paris, France
- 2020/21 **Outils Mathématiques**, *Licence Science des Organisations*, Université Paris Dauphine, Paris, France
- 2020/21 **Méthodes numériques : algèbre matricielle et fonctions d'une variable réelle**, *Licence Mathématique-Informatique*, Université Paris Dauphine, Paris, France
- 2017/18 **Introduction to the Theory of Self-Adjoint Operators**, *Course for Master and Ph.D. students*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain

Awards & Grants

- 2020 "Extraordinary Doctoral Award" for the best theses defended in 2017-2018 at University of Basque Country.
- 2016 Award "Premio Maiellaro", for the best master thesis in mathematics defended in 2014-2015 at University of Bari.
- 2014 Grant SVP-2014-068458, BCAM Severo Ochoa accreditation SEV-2013-0323, Spanish Ministry of Economy and Competitiveness MINECO
- 2013 Grant "Messageri della Conoscenza" Programma PAC 2012, MIUR, Università degli Studi di Bari.

Participation in Research Project

- Sep. 2022 - **PID2021-123034NB-I00 - Spectral Theory and PDE: Real and Fourier**,
 Aug. 2025 *Ministerio de Ciencia, Innovación y Universidades*, P. I.: Luca Fanelli
 BCAM - Basque Center for Applied Mathematics
- Jan. 2019 - **PGC2018-094522-B-I00**, *Ministerio de Ciencia, Innovación y Universidades*, P. I.:
 Dec. 2021 Luis Vega
 Universidad del País Vasco
- Oct. 2018 - **725528-MDFT: Mathematics of Density Functional Theory**, *ERC-EA European*
 Oct. 2021 *Research Council Executive Agency (H2020)*, P. I.: Mathieu Lewin
 CNRS - Centre National de la Recherche Scientifique

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- Apr. 2018 - **ANR Molecular Quantum ElectroDynamics (molQED)** , *French National Research Agency*, P. I.: Mathieu Lewin
 Mar. 2022 CNRS - Centre National de la Recherche Scientifique
- Dec. 2015 - **HADE - Harmonic Analysis and Differential Equations: New Challenges**,
 Nov. 2020 *ERC-EA European Research Council Executive Agency (H2020)*, P. I.: Luis Vega
 Universidad del País Vasco
- Jan. 2015 - **MTM2014-53145-P Analisis teórico y numérico de ecuaciones de evolución**,
 Dec. 2017 *Ministerio de Ciencia, Innovación y Universidades*, P. I.: Luis Vega
 Universidad del País Vasco
- Jul. 2014 - **SEV-2013-0323**, *Ministerio de Ciencia, Innovación y Universidades*, P. I.: Luis Vega
 June 2018 BCAM - Basque Center for Applied Mathematics

Events Organization

- Apr. 2022 **II Jornada Cantábrica de EDP's**, *Congress*, Centro Internacional de Encuentros Matemáticos
 Castro Urdiales, Spain
- Sep. 2023 **Harmonic Analysis and Differential Equations: new questions and challenges**,
Congress, Iberdrola Tower / Bizkaia Aretoa
 Bilbao, Spain

Referee Activity

Journal of Mathematical Physics
Revista Matemática Iberoamericana
Acta Applicandae Mathematicae
Nonlinear Analysis
Journal of Mathematical Analysis and Applications
Zeitschrift für angewandte Mathematik und Physik

Presentations

- June 2023 **Congress of Puglia Summer Trimester 2023**, *Dipartimento di Matematica, Università degli studi di Bari*, Bari, Italy
- Feb. 2023 **Two Dirac Days in Padova**, *Dipartimento di Matematica "Tullio Levi-Civita", Università degli studi di Padova*, Padova, France
- July 2022 **VI Congreso de Jóvenes Investigadores de la RSME**, *Contributed Talk in the session "Análisis Matemático Aplicado y Ecuaciones Diferenciales"*, University of Leon, Leon, Spain
- Jan. 2023 **The analysis of relativistic quantum systems**, *CIRM - Centre International de Rencontres Mathématiques*, Luminy, France
- July 2022 **The Dirac Equation**, *Université de Bordeaux*, Bordeaux, France
- May 2022 **PDEs and Relativistic Quantum Mechanics** , *Université de Nice*, Nice, France
- July 2021 **International Congress of Mathematical Physics**, *Contributed Talk in the session "Partial Differential Equation"*, University of Geneva, Geneva, Switzerland

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- Dec. 2020 **Xmaths Workshop 2020**, *Dipartimento di Matematica, Università degli studi di Bari*, Bari, Italy
- Dec. 2020 **Séminaires Dynamique Quantique et Classique**, *Centre de Physique Théorique*, Toulon, France
- Sep. 2019 **Density Functionals for Many-Particle Systems: Mathematical Theory and Physical Applications of Effective Equations**, *National University of Singapore*, Singapore
- July 2019 **ICIAM - International Congress on Industrial and Applied Mathematics 2019**, *Mini-symposia: Dirac Hamiltonians with critical singularities*, Valencia, Spain
- Apr. 2019 **Journée du projet ERC MDFT**, *Université Paris Dauphine*, Paris, France
- Sep. 2018 **Problèmes Spectraux en Physique Mathématique**, *Institut Henry Poincaré*, Paris, France
- Sep. 2018 **Trails in Quantum Mechanics and Surroundings**, *Politecnico di Torino*, Turin, Italy
- Apr. 2018 **Seminario di Analisi**, *Politecnico di Torino*, Turin, Italy
- Oct. 2017 **APDE Working Group**, *BCAM - Basque Center for Applied Mathematics*, Bilbao, Spain
- Sep. 2017 **Prairie Analysis Seminar 2017**, *Kansas State University*, Manhattan, Kansas, USA
- Sep. 2017 **IV Congreso de Jóvenes Investigadores RSME, Session of Harmonic Analysis and PDE**, *Universtitat de València*, Valencia, Spain
- May 2017 **Groupe de travail, Problèmes spectraux et physique mathématique**, *Université de Paris-Sud*, Paris, France
- July 2016 **Primer congrés predoc**, *Universtitat de València*, Valencia, Spain
- July 2015 **BCAM Workshop on Harmonic Analysis and PDE**, *BCAM - Basque Center for Applied Mathematics*, Bilbao, Spain
- June 2014 **Analysis group seminar**, *TU Bergakademie Freiberg*, Freiberg, Germany

Visiting Fellowship

- Oct. - **BCAM - Basque Center for Applied Mathematics**, Bilbao, Spain
- Nov. 2023 Prof. Luca Fanelli
- Feb. - **Università degli Studi di Bari**, *Dipartimento Interateneo di Fisica "Michelangelo Merlin"*, Bari, Italy
- Mar. 2022 Prof. Sandra Lucente
- Apr. 2018 **Politecnico di Torino**, *Dipartimento di Scienze Matematiche "Giuseppe Luigi Lagrange"*, Torino, Italy
- Prof. Riccardo Adami
- Apr. - July 2017 **Université Paris-Sud**, *Département de Mathématiques*, Orsay, France
- Prof. Konstantin Pankrashkin
- May 2016 **Universitat Politècnica de Catalunya**, *Departament de Matemàtiques*, Barcelona, Spain
- Prof. Albert Mas

May - June 2014 **TU Bergakademie**, *Fakultät für Mathematik und Informatik*, Freiberg, Germany,
"Messaggeri della Conoscenza" program
Prof. Michael Reissig

Attended schools, conferences and workshops

- Feb. 2019 **11e Rencontre du GDR Dynamic Quantique**, *Conference*, Institut de Mathématiques de Bordeaux, Bordeaux, Spain
- Feb. 2019 **Congreso Bial de la Real Sociedad Matemática Española**, *Conference*, Universidad de Cantabria, Santander, Spain
- Jan. 2018 **Weak solutions for the incompressible Euler equations**, *Course in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
Dr. Stefano Scrobogna.
- Mar. 2017 **An Introduction to Operator Semigroups**, *Course for in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
Dr. Sébastien Breteaux.
- Jan. 2017 **Eighth itinerant workshop in PDE's**, *Workshop*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
- Oct. 2016 **Layer potential methods**, *Course in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
Dr. Pedro Caro
- July 2016 **Primer congrés predoc**, *Workshop*, Universtitat de València, Valencia, Spain
- July 2016 **Second Summer School on harmonic analysis and PDE's**, *Course in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
- June 2016 **Functional calculus of operators**, *Course in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
Dr. Sébastien Breteaux.
- May 2016 **Bilbao meeting on Analysis and PDE's**, *Workshop*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
- May 2016 **Geometrical Aspects of Spectral Theory**, *Workshop*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
- Feb. 2016 **Mathematical Challenges in Quantum Mechanics**, *Workshop*, Bressanone, Italy
- Oct. 2015 **Algebraic Topology of Varieties**, *Course in Analysis*, UPV / EHU - Universidad del País Vasco / Euskal Herriko Unibertsitatea, Bilbao, Spain
Prof. Javier Fernández de Bobadilla.
- July 2015 **First summer school on harmonic analysis and PDE's**, *Course in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
- Apr. 2015 **A Short Introduction into the Fluid Dynamics**, *Course in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
Prof. Denys Dutykh.
- Mar. 2015 **Introduction to Pseudo-differential Calculus**, *Course in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
Dr. Sébastien Breteaux.

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- Mar. 2015 **An Introduction to Dispersive Equations**, *Course in Analysis*, BCAM - Basque Center for Applied Mathematics, Bilbao, Spain
Prof. Luis Vega.
- Jan. 2015 **Sixth itinerant workshop in PDE's**, *Workshop*, SISSA - Scuola Internazionale Superiore degli Studi Avanzati, Trieste, Italy
- Nov. 2013 **Basic P.D.E. and Applications**, *Course for Master and PhD student*, Università degli studi di Bari, Italy
Prof. Michael Reissig.
- Aug. 2013 **S.M.I - Scuola Matematica Interuniversitaria**, *Università degli studi di Perugia*, Perugia, Italy
- Mar. - May 2011 **Fourier Analysis and PDE**, *Tutorial for students*, Università degli studi di Bari, Bari, Italy
Prof. Luca Fanelli.

Computer skills

Good knowledge of Windows and Mac operating systems.
Good knowledge of \LaTeX .
Basic knowledge of Mathematica.
Basic knowledge of Matlab.

Languages

Italian Mothertongue
English level C1, Certificate *Aptis British Council*, 2021
Spanish Conversationally fluent
French Conversationally fluent

Last updated on: November, 2023