


ÁLVARO MUÑIZ-BREA

School of Mathematics, University of Edinburgh
Peter Guthrie Tait Road, Edinburgh EH9 3FD, UK

 amunizbrea.com  a.muniz-brea@ed.ac.uk  [LinkedIn](#)  [Google Scholar](#)

Education

University of Edinburgh

2021 – present (exp Aug 2025)

PhD in Mathematics

Edinburgh, UK

Advisor: Prof. Nick Sheridan

University of Cambridge

2020 – 2021

Part III of the Mathematical Tripos (MASt). Pass with First Class Honours

Cambridge, UK

Essay: “A Case Study in Intersection Theory”. Advisor: Prof. Dhruv Ranganathan

Universidade de Santiago de Compostela

2015 – 2020

BSc in Mathematics (double degree). GPA: 9.38/10.00

Santiago de Compostela, Spain

Universidade de Santiago de Compostela

2015 – 2020

BSc in Physics (double degree). GPA: 9.28/10.00

Santiago de Compostela, Spain

Dissertation: “Entanglement entropy and holography”. Advisor: Prof. José Edelstein

Ruprecht-Karls Universität Heidelberg

2018 – 2019

Erasmus Programme

Heidelberg, Germany

Research experience

University of Edinburgh

2021 – present

Graduate student

Edinburgh, UK

- Funded by European Research Council (ERC) grant
- Research on Lagrangian cobordisms and Chow groups

Instituto de Ciencias Matemáticas (ICMAT)

Summer 2020

Summer Research Student

Madrid, Spain

- Grant programme Severo Ochoa - ICMAT: Introduction to Research 2020
- Research on contact Hamiltonian systems, supervised by Prof. Manuel de León

Universidade de Santiago de Compostela

2019-2020

Undergraduate Student Researcher

Santiago de Compostela, Spain

- Funded by Spanish Ministry of Education and Professional Training
- Research on Grassmann varieties

Industry experience

G-Research

Spring 2024

Spring into Quant Finance

France

Awards and scholarships

G-Research Travel Grant | *G-Research*

2024

National Top Graduates Award (*top 1-2% in Spain*) | *Spanish Society of Academic Excellence (SEDEA)*

2021

M. T. Meyer Scholarship & Gertrude Mather Jackson Prize | *Girton College, University of Cambridge*

2021

European Research Council (ERC) Studentship | *University of Edinburgh*

2021-2025

Fellowship for postgraduate studies abroad | *Fundación Barrié*

2020-2021

Grant Programme Severo Ochoa - ICMAT: Introduction to Research 2020 | *ICMAT*

2020

Collaboration Research Grant | *Spanish Ministry of Education and Professional Training*

2019-2020

“Matrícula de Honor” (*top 5%*) in 24 courses | *University of Santiago de Compostela*

2015-2020

Acknowledgment for outstanding performance in university entrance exams | *Xunta de Galicia*

2015

Publications and preprints

Lagrangian cobordisms and K-theory of symplectic bielliptic surfaces

arxiv:2403.17098

The Hamilton-Jacobi theory for contact Hamiltonian systems

Mathematics 9(16) (2021)

joint with M. de León and M. Lainz

In preparation (drafts available upon request):

- Dimensionality of tropical Chow groups
- Filtrations on Lagrangian cobordism groups of tori

Talks

Conference talks

VI Congreso de Jóvenes Investigadores de la RSME | *Universidad de León (León, Spain)* **2023**

X Encuentro de Jóvenes Topólogos | *Universidad de Zaragoza (Zaragoza, Spain)* **2022**

IYIMeeting 2021 | *The Domus (A Coruña, Spain)* **2021**

Matemáticas: moito máis que números! | *Universidad de Santiago de Compostela (Santiago, Spain)* **2021**

Seminar talks

University of Cambridge | *Differential Geometry and Topology Seminar*

2024

2023

University of Edinburgh | *EDGE Seminar*

University of Edinburgh | *Tropical geometry seminar*

University of Edinburgh | *Preprint seminar*

2022

University of Edinburgh | *GPS seminar*

International Centre for Mathematical Sciences (ICMS) | *GlaMS induction event*

University of Edinburgh | *Hodge Club*

University of Edinburgh | *Cob/CH seminar*

University of Edinburgh | *Hodge Club*

Online | *GlaMS example showcase*

Teaching

Tutoring at the University of Edinburgh

Python Programming (MSc course), General Topology, Computing and Numerics, Statistics **2023-2024**

Computing and Numerics, General Topology, Honours Complex Variables, Differential Geometry **2022-2023**

Calculus & its Applications, MathsBase **2021-2022**

Other support

TA for “Séminaire de Mathématiques Supérieures 2022: Floer Homotopy Theory” (*Vancouver, Canada*) **Summer 2021**

Attended conferences and summer schools

London Geometry and Machine Learning <i>London (England, UK)</i>	Jul 2024
Summer School on h-principle <i>ICMAT (Madrid, Spain)</i>	Jun 2024
From Hamiltonian Dynamics to Symplectic Topology and Beyond <i>IHP (Paris, France)</i>	Jun 2024
Floer Homotopy Theory Spring School <i>Grand-Varennes (Paris, France)</i>	Apr 2024
Symplectic Paradise <i>Bozeman (MT, USA)</i>	Aug 2023
A conference in honour of Leonid Polterovich <i>ETH (Zurich, Switzerland)</i>	July 2023
Symplectic Topology workshop <i>Imperial College London (England, UK)</i>	June 2023
Graduate Summer School on Mirror Symmetry in the log Calabi-Yau setting <i>Eyam (England, UK)</i>	May 2023
VI Congreso de Jóvenes Investigadores de la RSME <i>Universidad de León (Leon, Spain)</i>	Feb 2023
Homological Mirror Symmetry annual meeting <i>University of Miami (FL, USA)</i>	Jan 2023
2022 Simons Collaboration on Homological Mirror Symmetry Annual Meeting <i>New York (NY, USA)</i>	Nov 2022
XXVIII Encuentro de Topología <i>Universidad de Zaragoza (Zaragoza, Spain)</i>	Oct 2022
Periods in Mirror Symmetry <i>International Centre for Mathematical Sciences (Scotland, UK)</i>	Sep 2022
SYNC Early Career Workshop <i>University of Davis (CA, USA)</i>	Aug 2022
Séminaire de Mathématiques Supérieures 2022: Floer Homotopy Theory <i>PIMS (BC, Canada)</i>	Jul 2022
Convexity in contact and symplectic topology <i>Institut Henri Poincaré (Paris, France)</i>	Aug 2022

Organizing

Graduate School on Mirror Symmetry in the log Calabi-Yau setting <i>Eyam Hostel (England, UK)</i>	May 2023
<ul style="list-style-type: none">• Summer school co-organised with D. Kozevnikov and K. Hugtenburg• Managed a £20,000 budget to organise a 5 day residential summer school with over 30 participants	
Hodge Club <i>University of Edinburgh</i>	2022-2023
<ul style="list-style-type: none">• Co-organised the PhD geometry seminar together with W. Bevington and K. Rega	

Languages

Spanish (native), Galician (native), English (fluent), German (intermediate), Arabic (*MSA*) (basic).
Python, \LaTeX , HTML, Lean