

# Gonzalo Cao-Labora

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🌍 Citizenship: Spanish (EU)

## Education **Massachusetts Institute of Technology, Cambridge MA (USA)**

PhD 2025 (expected).  
Advisor: Prof. Gigliola Staffilani

## **Universitat Politècnica de Catalunya, Barcelona (Spain)**

BSc in Mathematics, 2020.

Top of the class.

I completed my degree thesis as a Visiting Student in Princeton University, advised by Prof. Javier Gómez-Serrano.

I was awarded the 2021 Noether prize for my degree thesis (prize awarded to the best degree thesis in Mathematics in Catalonia)

## **Universitat Politècnica de Catalunya, Barcelona (Spain)**

BSc in Engineering Physics, 2020.

Third of the class.

**Languages** English (fluent), Spanish (native), Galician (native), Catalan (fluent).  
C++, Matlab,  $\LaTeX$ , Mathematica .

## Publications

### RESEARCH PAPERS:

1. "Smooth self-similar imploding profiles to 3D compressible Euler" (with T. Buckmaster and J. Gómez-Serrano). To appear at Quarterly of Applied Mathematics. (Special issue dedicated to Constantine Dafermos' 80th birthday)
2. "Smooth imploding solutions for 3D compressible fluids" (with T. Buckmaster and J. Gómez-Serrano). Submitted
3. "An Erdős-Fuchs theorem for ordered representation functions" (with J. Rué and C. Spiegel). The Ramanujan Journal 56, no. 1, 183-201 (2021).

### OTHER PUBLICATIONS:

1. "Self-similar profiles in Analysis of Fluids, a 1D model and the compressible Euler equations". Reports@SCM 6, 35-48 (2021).

2. "Holomorphic functional calculus for sectorial operators". TEMat monográficos 1, 61-77 (2020)
3. "Aplicación en combinatoria de las representaciones de grupos". TEMat 2, 67-83 (2018).

## Talks

- Symposium "Recent Developments in Fluids Dynamics" at ICIAM. Waseda University, Tokyo (August 2023)
- Conference. AMS New England Grad Student Conference, Brown University (April 2023)
- Seminar. Invited talk, Universidade de Santiago de Compostela (March 2023)
- Seminar. Analysis and PDE Seminar, MIT (February 2023)
- Seminar. PDE Seminar, Brown University (December 2022)
- Conference. Geometry & Analysis Seminar for Boston Area Grad Students (October 2022)
- Seminar. Analysis of Fluids Seminar, Princeton University (November 2021)
- Poster. Summer School on Harmonic Analysis and PDEs, Bilbao Center of Applied Mathematics (July 2019)
- Seminar. Introduction to Research Seminar (SII), Universidade de Santiago de Compostela (April 2019)
- Short talk. Workshop on Functional Analysis, Bilbao Center of Applied Mathematics (March 2019)

## Teaching and other support

Spring 2023	RA, under the supervision of Prof. Gigliola Staffilani
Fall 2022	TA, Differential Geometry (18.95). Massachusetts Institute of Technology
Spring 2022	TA, Stochastic Calculus (18.676). Massachusetts Institute of Technology
Fall 2021	RA, under the supervision of Prof. David Jerison
Year 2020-2021	Supported by a Presidential Fellow Award (award given to the best graduate applications of each year)
Year 2019-2020	Supported by Fundació Privada Cellex (via the CFIS mobility grant) and also by Generalitat de Catalunya (via the MOBINT grant) to do my undergraduate thesis at Princeton University
Year 2018-2019	Undergraduate TA for first-year students (Calculus and Algebra). Universitat Politècnica de Catalunya

## Attended Conferences and Summer Schools

Simons Collaboration on Wave Turbulence Annual Meeting. New York.	Dec 2023
Recent Advances in Mathematical Fluid Dynamics. Duke University, NC	May 2023
Simons Collaboration on Wave Turbulence Annual Meeting. New York.	Dec 2022
Wave Turbulence and Beyond. Torino.	Jul 2022
PDEs and Non-Linear Analysis. CIMAT, Guanajuato	Dec 2019
Harmonic Analysis and PDEs: Restriction Theory. BCAM, Bilbao	Jul 2019
Workshop on Functional Analysis. BCAM, Bilbao, Spain	Mar 2019

## Selected Contests

Two gold medals and one silver medal, International Mathematics Competition	2017–2019
Silver Medal, Southwestern Europe Regional Contest (SWERC)	2016
Bronze medal and honourable mention, IMO	2014–2015
Tenth national extraordinary award of secondary education	2014
Second regional extraordinary award of secondary education	2013