



NICOLAS DE RO

PhD Student in Physics

■ PERSONAL DATA

Place of birth Etterbeek, Belgium

Date of birth 05 February 1999

Nationalities Belgian and Spanish

Languages French (native), English (full professional) and Spanish (limited)

Work address Boulevard d'Yvoy 16, 1205 Genève, Switzerland. Office [SC1 215](#)

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■ EDUCATION

(November 2022–Present) **PhD student**, University of Geneva

Department of Theoretical Physics, group of Prof. [Julian Sonner](#).

(September 2020–August 2022) **Master's degree**, Université libre de Bruxelles

Master's degree in Physics, obtained with 90%, *La Plus Grande Distinction* (The Highest Honors).

(September 2017–June 2020) **Bachelor's degree**, Université libre de Bruxelles

Bachelor's degree in Physics, obtained with 72%, *Distinction* (Honors).

(September 2011–June 2017) **Secondary education**, European School of Brussels IV

European baccalaureate, obtained with 88%.

■ ACADEMIC EXPERIENCES

(October 2021–August 2022) **Master's thesis**, Université libre de Bruxelles

[Center for Nonlinear Phenomena and Complex Systems](#).

Title: *Local equilibrium approach to quantum transport in normal fluids*.

Supervised by Prof. [Pierre Gaspard](#).

(July–August 2021) **Internship**, Université libre de Bruxelles

[Center for Nonlinear Phenomena and Complex Systems](#).

Title: *Superfluid-Mott insulator transition in the Bose-Hubbard model*.

Supervised by Prof. [Nathan Goldman](#).

(November 2020–April 2021) **Internship**, Université libre de Bruxelles

Laboratory of Polymer and Soft Matter Dynamics.

Title: *Asymmetric lipid transfer between vesicles measured by QCM-D*.

Supervised by Prof. [Patricia Maria Losada Pérez](#).

(May–June 2020) **Bachelor's thesis**, Université libre de Bruxelles

[Spectroscopy, Quantum Chemistry and Atmospheric Remote Sensing service](#).

Title: *Fonction de localisation électronique*.

Supervised by Prof. [Emilie Cauët](#).

■ PUBLICATIONS LIST

(July 2026) De Ro, N., Sánchez-Garrido, A., & Sonner, J. (2026). *From phase space to Krylov space, one shell at a time*. [arXiv:2607.12585](#).

(April 2026) De Ro, N., Demaeyer, J., & Vannitsem, S. (2026). *Revisiting the Dynamical Properties of Pedlosky's Two-Layer Model for Finite Amplitude Baroclinic Waves*. [arXiv:2604.14123](#).

■ RESEARCH INTERESTS

My research lies at the intersection of quantum and statistical mechanics, with a particular focus on condensed matter and many-body physics. I am primarily interested in the nonequilibrium dynamics of many-body systems, operator dynamics, and quantum chaos and integrability. I also explore classical chaos and nonlinear dynamics, which emerge as the classical limit of the quantum systems I study. My specific areas of interest include:

- Operator spreading/complexity
- Quantum chaos
- Classical dynamical and chaotic systems
- Thermalization in many-body systems
- Classical and quantum transport phenomena

Some of my master's degree work and research are available at my [ResearchGate](#) page.

■ AWARDS AND FELLOWSHIPS

(September 2022) **Robert Brout Prize**, awarded by the [International Solvay Institutes](#).

In recognition of the quality of the work accomplished during the Master's degree (400 EUR).

(September 2022) **Second AScBr Prize**, awarded by the [Association des Diplômés de la Faculté des Sciences de l'Université libre de Bruxelles](#).

In recognition of the high scientific level of the master's thesis and the ability to vulgarize the results to a non-professional audience (250 EUR).

(January 2022) **Postgraduate fellowship**, awarded by the [Philippe Wiener – Maurice Anspach Foundation](#).

One-year scholarship awarded to graduates from the Université libre de Bruxelles who wish to pursue postgraduate studies at the University of Cambridge or Oxford. (Unused scholarship)

■ SCHOOLS AND CONFERENCES

(23–26 June 2026) [Quantum Chaotic Many Body Dynamics 2026](#), Coventry, UK.

The meeting aimed to bring together participants from the condensed matter, high energy physics, and quantum information communities, and to foster discussion on quantum chaotic many-body dynamics and related themes.

Personal contribution: Poster presentation.

(10–12 November 2025) [Fermi-Pasta-Ulam-Tsingou 70 Years Later: Slow Dynamics in Classical and Quantum Physics](#), Trieste, Italy.

This conference brought together mathematicians and physicists to assess the legacy of the Fermi-Pasta-Ulam-Tsingou problem, highlight recent advances, and explore future directions in both classical and quantum dynamics.

Personal contribution: None.

(24–28 March 2025) Workshop on [Facets of entanglement](#) and visit of Princeton University, Princeton, USA.

The workshop aimed to bring together experts from quantum information, mathematics, and physics working on different facets of entanglement in many-body systems.

Personal contribution: Meetings with local professors.

(9–11 December 2024) Workshop in Honor of Prof. Pierre Gaspard, Brussels, Belgium.

The Workshop was organized in honor of Pierre Gaspard, covering various aspects of statistical mechanics, thermodynamics and nonlinear physics.

Personal contribution: None.

(1 July 2024) New perspectives in quantum many-body physics, Zürich, Switzerland.

Informal one-day workshop designed to provide participants with an overview of recent developments in quantum many-body physics.

Personal contribution: None.

(26 November–2 December 2023) Workshop on Chaos and information dynamics in quantum many body systems, Erice, Italy.

Focused on a comprehensive account of quantum chaotic dynamics driven by many-body interactions: scrambling, out-of-time order correlations, thermalization dynamics.

Personal contribution: None.

(21 August–1 September 2023) School on [Quantum Many-Body Phenomena out of Equilibrium: from Chaos to Criticality](#), Trieste, Italy.

Overview of frontier research topics in the context of nonequilibrium quantum many-body dynamics.

Personal contribution: Poster presentation.

(4–9 June 2023) [Wilhelm and Else Heraeus School - Open quantum systems and physics](#), Hyytiälä, Finland.

Education in state-of-the-art experimental realizations and theoretical formulations of open quantum systems.

Personal contribution: Flash talk and poster presentation.

(15–20 January 2023) [9th MaNEP Winter School](#), Saas-Fee, Switzerland.

Hot topics in driven, two-dimensional, and topological matter.

Personal contribution: None.

(24 May 2022) Invited speaker at the University of Geneva, Geneva, Switzerland.

Master's thesis presentation.

■ TEACHING ASSISTANT

(Spring semester 2026) **Méthodes numériques pour physiciens I (Numerical methods for physicists I)** [BA1 course]

Main course given by Dr. [Christophe Berthod](#).

(Autumn semesters 2023–2026) **Mécanique classique pour mathématicien·nes (Classical mechanics for mathematicians)** [BA3 course]

Main course given by Profs. [Anton Alekseev](#) and [Julian Sonner](#).

(Spring semester 2023) **Group theory for physics students** [BA3 course]

Main course given by Prof. [Stefano Foffa](#).

■ PROFESSIONAL EXPERIENCES

(Autumn semester 2024) **Innosuisse Start-up Training Business Concept**

14-week training program and development of a business project that was positively evaluated by the jury.

(June 2023–2026) **Collège de Genève**

External examiner of the oral Swiss Matura exam in mathematics (normal and advanced levels). Total of 14.5 days of examination.

(September–October 2022) **RMI**

Based on research initiated during my master's degree, Prof. [Stéphane Vannitsem](#) hired me to pursue this research for two months.