Daniele Fedeli

Personal details

Name **Daniele Fedeli**.

Email **daniele.fedeli@physics.ox.ac.uk**.

Education

2026–present **PhD in Theoretical Physics**, *University of Oxford*, Oxford, UK.
Supervisor: Prof. Michael Barnes. Research on plasma turbulence in stellarators. Clarendon Scholar; doctoral research also supported by the Max Planck Institute for Plasma Physics, Greifswald.

2025–2026 **Visiting Departmental Student**, *University of Oxford*, Oxford, UK.
Research for my master's thesis within the Theoretical Plasma Physics Group.

2024–2026 **Master's Degree in Physics**, *University of Pisa*, Pisa, Italy.
Final grade: 110/110 *cum laude* (September 2026). Thesis: *Coherent Structures in Sheared Ion-Temperature-Gradient Plasma Turbulence*; PDF in the University of Pisa ETD archive, under embargo until 2029.

2021–2026 **Diploma di Licenza in Physics**, *Scuola Normale Superiore*, Pisa, Italy.
Highly selective college offering advanced education and full funding to the top 32 STEM students in the country. Admission is through a national competition with two written and two oral exams.

2021–2024 **Bachelor's Degree in Physics**, *University of Pisa*, Pisa, Italy.
Final grade: 110/110 *cum laude*.

Research Experience

Title ***Plasma turbulence in stellarators***

Supervisor Prof. Michael Barnes

When Oct 2026 - present

Title ***Coherent Structures in Sheared Ion-Temperature-Gradient Plasma Turbulence***

Supervisors Prof. Alex Schekochihin and Dr. Plamen Ivanov

When Oct 2025 - Sep 2026

Description Master's thesis. In a minimal model of sheared ion-temperature-gradient turbulence, I isolated the ferdinon, a long-lived coherent structure that drifts across the shear flow, gave numerical evidence that it is a stable travelling solution, and identified three shear regimes, including one in which it seeds turbulence and carries heat ballistically.

Title ***Zonal flows generation in turbulent fusion plasma***

Supervisors Prof. Francesco Pegoraro and Prof. Franco Flandoli

When Jan 2025 - Apr 2025

Description This dissertation presented a review of zonal-flow generation within the Hasegawa–Mima framework. I began with a careful derivation of the equation and the dispersion relation for drift waves, then concluded by examining modulational instabilities in this context.

Honors and Awards

2026–present **Clarendon Scholarship**, *University of Oxford*.
Highly competitive graduate scholarship, awarded on the basis of academic excellence and potential.

2024 **PLANCKS**, *Dublin, Ireland*, Silver medal.
International theoretical physics competition for undergraduate and master's students, where teams solve advanced four-hour problem sets.

2021 **International Physics Olympiad (IPhO)**, *Vilnius (Online), Lithuania*, Bronze medal.
Most prestigious annual competition for high-school students, with about 400 selected contestants from over 80 countries.

2021 **Italian Physics Olympiad**, *Senigallia, Italy*, Gold medal.
National multi-stage competition involving thousands of students; gold medals are awarded to the top 5 performers.

2019–2021 **Italian Mathematics Olympiad**, *Cesenatico, Italy*, Silver medal (2019, 2020, 2021).
National multi-stage mathematics competition, in which around 200,000 students compete each year; silver medals are awarded to the top 75 students.

2021 **"I Fuoriclasse della Scuola" Scholarship**, *issued by Italian Ministry of Education*.
National program that awards scholarships to a small number of outstanding high-school students.

Additional Trainings and Camps

May 2021 **PreIPhO Stage**, *Italian Physics Olympiads Committee*, Italy.
One-week intensive training and selection of the Italian team for the International Physics Olympiad; only the top 10 Italian students are invited.

2020, 2021 **Physics Olympiads Training Camp**, *Scuola Normale Superiore*, Pisa, Italy.
Two one-week intensive training camps with lectures and collaborative group work. Admission is through a written and oral exam, and only 24 students are selected.

2018, 2019 **Mathematics Olympiads Training Camp**, *Unione Matematica Italiana*, Italy.
Two one-week training camps focused on problem solving in several areas of mathematics.

Teaching and Mentoring

2026–present **Graduate Mentor and Graduate Teaching Assistant**, *Merton College*, Oxford, UK.
Mark Statistical Mechanics problem sheets for eight second-year undergraduates and serve as their mentor, offering support for their studies.

2023, 2024 **Lecturer, Physics Olympiads Training Camp**, *Scuola Normale Superiore*, Pisa, Italy.
Designed and delivered two advanced problem-solving lectures for the camp's 24 selected high-school students.

2022, 2023 **Lecturer, Preparation Course for Physics Olympiads**, *Liceo "A. Righi"*, Rome, Italy.
Taught two courses of weekly theory and problem-solving sessions to a few students, some of whom reached the national finals.

2022–2023 **Private tutor for university admission tests**.
Prepared students for university entrance examinations in scientific subjects.

Academic Service and Leadership

2023–2026 **Member of the Board of Governors**, *Scuola Normale Superiore*, Pisa, Italy.
Elected student representative for two terms; worked on the Board's routine business and, among much else, on revising the regulations of the Students' Assembly and of college life.

2020–2022 **Founder of "Oltre" and Member of the School Council**, *Liceo "A. Righi"*, Rome, Italy.
Founded and led Oltre, an association of about twenty members that organized events and handled student representation for the whole school; in the same spirit, represented students on the School Council.

Skills

Languages Italian (native), English (fluent).

Programming Python (NumPy/SciPy, matplotlib), MATLAB; extensive use of LaTeX; basic knowledge of C/C++ and LabVIEW.

Volunteering

Apr 2024 **Volunteer Staff Member**, *Italian Physics Olympiads Finals*, Senigallia, Italy.

May 2022, 2023 **Volunteer Staff Member**, *Italian Mathematics Olympiads Finals*, Cesenatico, Italy.

Jul 2022 **Volunteer, WeCare Projects**, *Kibaya, District of Ngoma*, Rwanda.
Collaborated with a team of volunteers to build a classroom for a local school