



Citizenship: French

CELIA - Université Bordeaux

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RESEARCH INTERESTS

High intensity laser-plasma interaction, high energy density physics, laser-matter interaction: particle acceleration, hot and dense plasmas, laboratory astrophysics, Particle-In-Cell codes, high energy radiation, laser material processing.

EDUCATION

H.D.R. Astrophysics, plasmas, and nuclear physics	
University of Bordeaux, France	(2012)
Ph.D. Astrophysics with distinction	
Université Pierre et Marie Curie, France	(2006)
M.S Astrophysics with distinction	
Université Pierre et Marie Curie, France	(2002)

ACADEMIC CAREER

Since September 2017: **Full Professor of Physics** at the Université de Bordeaux.

Since November 2020: **Professeur associé** at INRS (Canada).

2016: **Invited Scholar** at the University of Nevada, Reno (USA).

2008-2017: **Associate Professor of Physics** at the Université de Bordeaux (France).

2009-2015: **Adjunct Professor** with the Department of Physics at the University of Nevada, Reno.

2007-2008: **Postdoctoral Fellow** at the Centre de Physique Théorique at Ecole Polytechnique (Palaiseau, France).

2006-2007: **Postdoctoral Fellow** at the Nevada Terawatt Facility, Department of Physics, University of Nevada, Reno, USA.

PRIZES AND SCIENTIFIC DISTINCTIONS

Junior member of the Institut Universitaire de France for the period 2014-2019.

Prime d'Encadrement Doctoral et de Recherche, 2019-2023.

Prime d'Excellence scientifique, 2010-2019.

Prime d'Innovation pédagogique, University Bordeaux 1, 2013-2014.

COORDINATION AND PARTICIPATION IN RESEARCH PROJECTS

~1,800,000€ obtained for CELIA as coordinator since 2010: French National Research Agency (local coordinator), AFOSR (PI), Région Aquitaine (PI), Univ. Bordeaux (Thrust Coordinator).

STUDENTS SUPERVISED

4 post-docs, 21 PhD students co-supervised (6 currently supervised and 15 have defended), and shorter participations for 10 Ph.D. students and 4 post-docs, 18 graduate students (second year of Master), 24 undergraduate students, 3 high school students.



PROFESSIONAL RESPONSIBILITIES

Coordinator of the Extreme Light Thrust, one of the four Thrusts of the Grand Programme de Recherche LIGHT of the University of Bordeaux (2021-2025, 6.5 M€) since May 2021 (23 permanent researchers and ~30 non-permanent researchers are involved in this Thrust).

Academic Officer of the University of Bordeaux Graduate Program in Light Sciences and Technologies since November 2017 (<https://light-st.u-bordeaux.fr/>).

Member of the 5th technical committee (Theoretical Physics and plasma physics) of GENCI since September 2016. GENCI is the French HPC agency.

Secretary of the board of the plasma division of the Société Française de Physique, since November 2014.

ACADEMIC QUANTITATIVE INDICATORS

h-index: 37 ; 6412 citations on May 19, 2023 on Google Scholar: 2 Book chapters, **144 peer-reviewed articles** including 13 Phys. Rev. Lett., 1 Science, 2 Nat. Phys., 1 Com. Phys., 1 Astronomy & Astrophysics, and 4 Sci. Rep., 19 peer-reviewed proceedings, 38 proceedings, **3 plenary presentations, 43 invited presentations, 42 oral presentations**, 29 posters, 34 seminars, 1 patent, 2 press releases as well as brief communications in large audience journals.

BIOGRAPHY

After completing his PhD from Université Pierre et Marie Curie, France, and postdoctoral studies from University of Nevada Reno (UNR), USA, and Ecole Polytechnique, France, Emmanuel d'Humières became Assistant Professor at the University of Bordeaux in 2008, and Professor in 2017. In 2020 he also became Professeur Associé at INRS in Canada. After being group leader at the CELIA laboratory from 2017 to 2021 (up to 15 permanent and 20 non-permanent researchers), he is now coordinator of the Extreme Light Thrust, one of the four Thrusts of the Grand Programme de Recherche LIGHT of the University of Bordeaux (2021-2025, 6.5 M€). He is also Academic Officer of the Graduate Program on Light Sciences and Technologies of the University of Bordeaux. Honorary member of the Institut Universitaire de France, he has been member of the Conseil national des universités, adjunct professor at UNR from 2009 to 2015 and invited scholar at UNR from January to August 2016. At the CELIA laboratory, he works on particle acceleration and radiation generation using intense lasers and on the associated simulation codes. He has published more than 140 papers in reputed journals, and is secretary of the Board of the Plasma Division of the Société Française de Physique since 2014.

LIST OF UP TO 10 OF THE MOST RELEVANT SCIENTIFIC RESULTS

1. W. Yao, A. Fazzini, S.N. Chen, [...] **E. d'Humières** and J. Fuchs. Laboratory evidence for proton energization by collisionless shock surfing. Nat. Phys. 17, 1177 (2021). <https://doi.org/10.1038>
2. Q. Moreno, M. E. Dieckmann, D. Folini, R. Walder, X. Ribeyre, V. T. Tikhonchuk and **E. d'Humières**, Shocks and phase space vortices driven by a density jump between two clouds of electrons and protons, Plasma Phys. Control. Fusion 62 025022 (2020).
3. C.K. Li, V. T. Tikhonchuk, Q. Moreno, H. Sio, **E. d'Humières** et al., Collisionless Shocks Driven by Supersonic Plasma Flows with Self-Generated Magnetic Fields, Phys. Rev. Lett. 123, 055002 (2019).
4. Q. Moreno, M. E. Dieckmann, X. Ribeyre, [...] and **E d'Humières**, Failed self-reformation of a sub-critical fast magnetosonic shock in collisionless plasma, Plasma Res. Express 1, 035001 (2019).
5. D. P. Higginson, [...] **E. d'Humières**, and J. Fuchs, Laboratory investigation of particle acceleration and magnetic field compression in collisionless colliding fast plasma flows, Commun. Phys. 2, 60 (2019).
6. X. Ribeyre, **E. d'Humières**, S. Jequier, et al., Pair creation in collision of γ -ray beams produced with high intensity lasers, Phys. Rev. E. 93, 013201 (2016).
7. **E. d'Humières**, A. Brantov, V. Yu. Bychenkov, and V. T. Tikhonchuk, Optimization of laser-target interaction for proton acceleration, Phys. Plasmas 20, 023103 (2013).
8. T. Toncian, M. Borghesi, J. Fuchs, **E. d'Humières**, et al., Ultrafast Laser-Driven Microlens to Focus and Energy-Select Mega-Electron Volt Protons, Science 312, 410 (2006).
9. J. Fuchs, P. Antici, **E. d'Humières**, et al., Scaling laws for laser-driven proton acceleration: paths towards energy increase, Nature Physics 2, 48-54 (2006).
10. **E. d'Humières**, E. Lefebvre, L. Gremillet, V. Malka, Proton acceleration mechanisms in high-intensity laser interaction with thin foils, Phys. Plasmas 12, 062704-1/13 (2005).