

PERSONAL INFORMATION

Family name, First name: CÉBRON, David
 Birth, Nationality: 12 November 1985, French (married, 2 children)
[Web of Science profile](#) [ORCID profile](#)
[Google Scholar profile](#) [My website](#)

RESEARCH INTERESTS

- ◇ **Orbital forcings:** tides, precession & librations driven core flows, topographic effects in fluid cores
- ◇ **Planetary core dissipation:** Earth's nutations, lunar librations, core-mantle boundary coupling
- ◇ **Planetary dynamos:** Early Earth and Moon dynamos, binary systems

EDUCATION

2008 – 2011 [PhD](#) in Geophysical Fluid Dynamics at IRPHE , Aix-Marseille Univ., France
 Advisors: P. Le Gal & M. Le Bars
 2007 – 2008 M.Sc. in Fluid Dynamics at University of Nantes, first class honours
 2005 – 2008 Ecole Centrale de Lille (Engineering School), France

CURRENT & PREVIOUS POSITIONS

Since 2014 CNRS Researcher at ISTerre lab. (Geophysics), Grenoble Alpes Univ., France
 2012 – 2014 Research Fellow (Marie-Curie [COFUND Fellow](#)) at ETH Zurich, Switzerland

FELLOWSHIPS & AWARDS

2021 [Prix Ampère de l'Électricité de France](#) attributed to our ISTerre's [Geodynamo group](#) by the [French Academy of Sciences](#), 50 000 €
 2018 CNRS bonus for scientific excellence ("Prime d'Excellence Scientifique").
 2013 [Paul Germain prize](#) for research in Fluid Dynamics, at the [French Mechanics conference](#) (CFM 2013), 3000 €
 2012 – 2014 Awarded a Marie-Curie COFUND program post-doctoral research, 180 000 €

GRANTS & FUNDING

2022 – 2026 Participant of the [ANR grant MIN-DIXI](#), led by G. Morard (625 000€)
 2020 – 2026 [PI](#) of the [ERC project THEIA](#), see its [website](#) (1 448 493 €)
 2013 – 2019 Participant of the [ANR grant TUDY](#) (276 400€)
 2014 – 2019 co-PI of the [ANR grant MAGLUNE](#) (292 534 €)
 2017 – 2018 PI of a grant from PNP, INSU (5500 €)
 2015 – 2017 PI of a [grant from Labex OSUG@2020](#) (18 307 €)

SUPERVISION OF GRADUATE STUDENTS & POSTDOCTORAL FELLOWS

2020 – 2023 Advisor of the research post-doctoral fellow [Jérémie Vidal](#)
 2020 – 2023 Principal advisor (with Dr D. Jault) for the PhD of [Rémy Monville](#)
 2020 – 2023 Official co-advisor (with Dr G. Morard) for the PhD of [Nicolas Jaisle](#)
 2016 – 2019 Co-advisor (with Dr P. Cardin) for the PhD of [Sylvie Su](#)
 2014 – 2018 Co-advisor (with Dr N. Schaeffer) for the PhD of [Jérémie Vidal](#)
 2012 – 2014 Active advisor role for the PhD of [Zacharias Stelzer](#) (member of his PhD committee, two publications as co-author)

INSTITUTIONAL RESPONSIBILITIES

Since 2021 Team leader of the [Geodynamo group](#) of ISTerre, made of 9 researchers.
 Since 2021 Deputy of Renaud Deguen at the Conseil de Laboratoire
 Since 2018 Member of the Scientific board of the Planetology National program (INSU, CNRS)
 Since 2015 [Member of the editorial board](#) of the popular physics journal of CNRS [Reflète de la Physique](#), edited by the French Physics Society (SFP)
 Since 2015 Member of the board of the *Fluid workshop* of OSUG

PUBLICATIONS & COMMUNICATIONS

- ◇ **45 articles** published in international peer-reviewed journals (38 articles since my PhD, 29 without my PhD advisors, 14 as first author), giving me a **h-index of 20** ([Web of Science](#))
- ◇ **7 invited presentations** in international conferences and workshops
- ◇ **10 departmental seminars**, in France, UK & Switzerland

MEMBER OF PHD JURY

- 2019 PhD of [Clément Nobili](#), Aix-Marseille University
- 2018 PhD of [Jérémy Vidal](#), Grenoble-Alpes University
- 2014 PhD of [Zacharias Stelzer](#), ETH Zürich (awarded by the [ETH silver medal](#))

TEACHING ACTIVITIES

- Since 2014 Geophysical Fluid Dynamics, 25h/yr (M.Sc. - M2R), Univ. Grenoble Alpes
- 2012 – 2014 ETHZ Lecturer: Geophysics M.Sc. course, 20h/yr (M.Sc. - M1 students)
- 2008 – 2011 Teaching assistant at Aix-Marseille Univ. for 64h/yr during 3 years (192h)

REVIEWING ACTIVITIES

- 2020 Reviewer of 1 proposal for the NERC Pushing the Frontiers call (UK funding)
- 2017 Reviewer of 1 proposal for the CNRS-INSU (PNP 2018 program).
- Since 2010 Reviewer for many Physics, Fluid Mechanics and Geophysics journals: **51 verified reviews**, at about 5 papers/year.

SUPERVISION OF UNDERGRADUATE & GRADUATE STUDENTS

- 2020 Antonin Borderies, L3, co-advised with N. Schaeffer
- 2020 Remy Monville, M2R, co-advised with D. Jault
- 2019 Lou Anne Veyrat de Lachenal, M1, with N. Schaeffer
- 2019 Thibault Launois, M1, co-advised with N. Gillet
- 2019 François Lemot, L3, co-advised with N. Schaeffer
- 2019 Arnaud Piet, M2R, co-advised with P. Cardin & H.-C. Nataf
- 2018 Remy Monville, L3, co-advised with N. Schaeffer
- 2017 Youcef Bouarour, M1, co-advised with F. Plunian
- 2017 Camila Cesar, M1, co-advised with P. Cardin & F. Plunian
- 2015 Yann Alexanian, L2, stage d'excellence

CAREER BREAKS

In 2015 – 2016, I had a (discontinuous) long-term sick leave of 7 months and 23 days (including week-ends) because of a long-term illness.

PUBLICATIONS**Refereed articles**

Below, the names of the students and Research Fellows that I advised have been systematically indicated with an asterisk *.

- 46. Precession-driven flows in stress-free ellipsoids J. Vidal D. Cébron, *Journal of Fluid Mechanics*, in proof.
- 45. Vidal* J. & Cébron D., Precession-driven flows in stress-free ellipsoids, *Nature Reviews Earth & Environment*, **3**, 255–269, 2022.
- 44. Triana S.A., Dumbery M., Cébron D., Vidal* J., Trinh A., Gerick F., Requier J., [Core eigenmodes and their impact on the Earth's rotation](#), *Surveys in Geophysics*, **43**, 107-148, 2022.
- 43. Vidal* J. & Cébron D., [Acoustic modes of rapidly rotating ellipsoids Subject to centrifugal gravity](#), *Journal of the Acoustical Society of America*, **150** (2), 1467-1478, 2021.

42. Vidal* J. & Cébron D., [Kinematic dynamos in triaxial ellipsoids](#), *Proceedings of the Royal Society A*, **477** (2252), 20210252, 2021.
41. Cébron D., Vidal* J., Schaeffer N., Borderies* A., Sauret A., [Mean zonal flows induced by weak mechanical forcings in rotating spheroids](#), *Journal of Fluid Mechanics*, **916**, A39, 2021.
40. Jeong D.-H., Kvasnickova A., Boutin J.-B., Cébron D., Sauret A., [Deposition of a particle-laden film on the inner wall of a tube](#), *Physical Review Fluids*, **5**, 114004, 2020.
39. Vidal* J. & Cébron D., [Acoustic and inertial modes in planetary-like rotating ellipsoids](#), *Proceedings of the Royal Society A*, **476**, 20200131, 2020.
38. Su* S., Cébron D., Nataf H.-C., Cardin P., Vidal* J., Solazzo M., Do Y., [Acoustic spectra of a gas-filled rotating spheroid](#), *European Journal of Mechanics / B Fluids*, **84**, 302-310, 2020.
37. Vidal* J., Su* S., Cébron D., [Compressible fluid modes in rigid ellipsoids: towards modal acoustic velocimetry](#), *Journal of Fluid Mechanics*, **885**, A39, 2020.
36. Vidal* J., Cébron D., ud-Doula A., E. Alecian E., [Fossil field decay due to nonlinear tides in massive binaries](#), *Astronomy & Astrophysics*, **629**, A142, 2019.
35. Monville* R., Vidal* J., Cébron D., Schaeffer N., [Rotating convection in stably-stratified planetary cores](#), *Geophysical Journal International*, **219**, S195–S218, 2019.
34. Cébron D., Laguerre R., Noir J., Schaeffer N., [Precessing spherical shells: flows, dissipation, dynamo and the lunar core](#), *Geophysical Journal International*, **219**, S34–S57, 2019.
33. Vidal* J., Cébron D., Schaeffer N., Hollerbach R., [Magnetic fields driven by tidal mixing in radiative stars](#), *Monthly Notices of the Royal Astronomical Society*, **475**, 4579–4594, 2018.
32. Vidal* J. & Cébron D., [Inviscid instabilities in rotating ellipsoids on eccentric Kepler orbits](#), *Journal of Fluid Mechanics*, **833**, 469-511, 2017.
31. Lemasquerier D., Grannan A. M., Vidal* J. & Cébron D., Favier B., Le Bars M., Aurnou J. M., [Libration-driven flows in ellipsoidal shells](#), *Journal of Geophysical Research: Planets*, **122**, (9): 1926-1950, 2017.
30. Cébron D., Viroulet S., Vidal* J., Masson J.-P., Viroulet P., [Experimental and Theoretical Study of Magneto-hydrodynamic Ship Models](#), *PLoS ONE*, **12**, (6): e0178599, 2017.
29. Bouvier J. & Cébron D., [Protostellar spin-down: a planetary lift?](#), *Monthly Notices of the Royal Astronomical Society*, **453**, (4): 3720-3728, 2015.
28. Stelzer* Z., Miralles S., Cébron D., Noir J., Vantieghem S., Jackson A., [Experimental and numerical study of electrically-driven MHD flow in a modified cylindrical annulus: \(2\) Instabilities](#), *Physics of Fluids*, **27**, 084108, 2015.
27. Stelzer* Z., Cébron D., Miralles S., Vantieghem S., Noir J., Scarfe P., Jackson A., [Experimental and numerical study of electrically-driven MHD flow in a modified cylindrical annulus: \(1\) Base flow](#), *Physics of Fluids*, **27**, 077101, 2015.
26. Sauret A., Boulogne F., Cébron D., Dressaire E., Stone H. A., [Wetting morphologies on an array of fibers of different radii](#), *Soft Matter*, **11**, 4034-4040, 2015.
25. Vantieghem S., Cébron D., Noir J., [Latitudinal libration driven flows in triaxial ellipsoids](#), *Journal of Fluid Mechanics*, **771**, 193- 228, 2015. [Corrigendum](#).
24. Cébron D., [Bistable flows in precessing spheroids](#), *Fluid Dynamics Research*, **47**, 025504, 2015.
23. Le Bars M., Cébron D., Le Gal P., [Flows Driven by Libration, Precession, and Tides](#), *Annual Review of Fluid Mechanics*, **47**, 163-193, 2015.
22. Grannan A., Le Bars M., Cébron D., Aurnou J. M., [Global-scale Turbulent Flows in Libration-Driven Ellipsoids](#), *Physics of Fluids*, **26**, 126601, 2014.
21. Cébron D. & Hollerbach R., [Tidally driven dynamos in a rotating sphere](#), *The Astrophysical Journal Letters*, **789**, L25, 2014.
20. Marti P., Schaeffer N., Hollerbach R., Cébron D., Nore C., Luddens F., Guermond J.-L., Aubert J., Takehiro S., Sasaki Y., Hayashi Y., Simitev R., Busse F.H. , Vantieghem S., Jackson A., [Full sphere hydrodynamic and dynamo benchmarks](#), *Geophysical Journal International* **197** (1): 119-134, 2014.
19. Cébron D., Vantieghem S., Herreman W., [Libration driven multipolar instability](#) . *Journal of Fluid Mechanics*, **739**, 502-543, 2014.
18. Jackson A., Sheyko A., Marti P., Tilgner A., Cébron D., Vantieghem S., Simitev R., Busse F.H., Zhan X., Schubert G., Takehiro S., Sasaki Y., Hayashi Y., Ribeiro A., Nore C., Guermond J.-L., [A spherical shell numerical dynamo benchmark with pseudo vacuum magnetic boundary conditions](#), *Geophysical Journal International*, **196** (2): 712-723, 2014.
17. Noir J. & Cébron D., [Precession driven flows in non-axisymmetric ellipsoids](#), *Journal of Fluid Mechanics*, **737**, 412-439, 2013.
16. Sauret A., Cébron D., Le Bars M., [Spontaneous generation of inertial waves from boundary turbulence in a librating sphere](#), *Journal of Fluid Mechanics*, **728**, R5, 2013.
15. Cébron D., Le Bars M., Le Gal P., Moutou C., Leconte J., Sauret A., [Elliptical instability in Hot-jupiter systems](#), *Icarus*, **226**, 2, 1642-1653, 2013. [Corrigendum](#).
14. Viroulet S. Cébron D., Kimmoun O., Kharif C., [Shallow water waves generated by solid landslides](#), *Geophysical Journal International*, **193**, 2, 747-762, 2013.
13. Cébron D., Le Bars M., Noir J., Aurnou J. M., [Libration driven elliptical instability](#), *Physics of Fluids*, **24**, 061703, 2012. [Erratum](#).
12. Noir J., Cébron D., Le Bars M., Sauret A., Aurnou J. M., [Experimental study of libration-driven flows in non-axisymmetric containers](#), *Physics of the Earth and Planetary Interiors*, **204-205**, 1-10, 2012.
11. Boisson J., Cébron D., Moisy F., Cortet P.P., [Earth rotation prevents exact solid body rotation of fluids in the laboratory](#), *EPL (Europhysics Letters)*, **98**, 59002, 2012. Selected in [EPL Highlights 2012](#).
10. Cébron D., Le Bars M., Maubert P., Le Gal P., [Magnetohydrodynamic simulations of the elliptical instability in triaxial ellipsoids](#), *Geophysical & Astrophysical Fluid Dynamics*, **106**, 4-5, 524-546, 2012. [Corrigendum](#).

9. Sauret A., Cébron D., Le Bars M., Le Dizès S., [Fluid flows in a librating cylinder](#), *Physics of Fluids*, **24**, 026603, 2012.
8. Cébron D., Le Bars M., C. Moutou C., Le Gal P., [Elliptical instability in terrestrial planets & moons](#), *Astronomy & Astrophysics*, **539**, A78, 1-16, 2012.
7. Le Bars M., Wicczorek M. A., Karatekin Ö., Cébron D., Laneuville M., [An impact-driven dynamo for the early Moon](#), *Nature*, **479**, 215-218, 2011.
6. Cébron D., Le Bars M., Meunier P., [Tilt-over mode in a precessing triaxial ellipsoid](#), *Physics of Fluids*, **22**, 116601, 2010.
5. Sauret A., Cébron D., Morize C., Le Bars M., [Experimental and numerical study of mean zonal flows generated by librations of a rotating spherical cavity](#), *Journal of Fluid Mechanics*, **662**, pp. 260-268, 2010.
4. Herreman W., Cébron D., Le Dizès S., Le Gal P., [Elliptical instability in rotating cylinders: liquid metal experiments under imposed magnetic field](#), *Journal of Fluid Mechanics*, **661**, 130-158, 2010.
3. Cébron D., Maubert P., Le Bars M., [Tidal instability in a rotating and differentially heated ellipsoidal shell](#), *Geophysical Journal International*, **182**, 1311-1318, 2010.
2. Cébron D., Le Bars M., Leontini J., Maubert P., Le Gal P., [A systematic numerical study of the tidal instability in a rotating triaxial ellipsoid](#), *Physics of the Earth and Planetary Interiors*, **182**, 119-128, 2010.
1. Cébron D. & J-F. Sigrist, [Analytical and numerical study of validation test-cases for multi-physic problems: application to magneto-hydro-dynamic](#), *The International Journal of Multiphysics*, **3** (1), 81-100, 2009.

Conference Proceedings

14. Vidal* J., Su* S., Cébron D., [Polynomial expansion of acoustic modes in fluid ellipsoids](#), *22eme Rencontre du Non-Linéaire*, Comptes-rendus de la Rencontre du Non-linéaire 2019.
13. Vidal* J. & Cébron D., [Spectral simulations of tidal flows in weakly deformed spheres](#), *21eme Rencontre du Non-Linéaire*, Comptes-rendus de la Rencontre du Non-linéaire 2018.
12. Vidal* J., Cébron D., Schaeffer N., [Diffusionless hydromagnetic modes in rotating ellipsoids: a road to weakly nonlinear models?](#), *19eme Rencontre du Non-Linéaire*, Comptes-rendus de la Rencontre du Non-linéaire 2016.
11. Alecian E., Neiner C., Wade G.A., Mathis S., Bohlender D., Cébron D., Folsom C., Grunhut J., Le Bouquin J.-B., Petit V., Sana H., Tkachenko A., ud-Doula A., the BinaMICS collaboration, [New Windows on Massive Stars](#), *proceedings of the IAU Symposium 307*, 2014.
10. Cébron D., Le Bars M., Le Gal P., [L'instabilité elliptique dans les enveloppes fluides des planètes et des étoiles](#), *Actes du 21eme Congrès Français de Mécanique*, Bordeaux, France, 2013.
9. Viroulet S., Cébron D., Kimmoun O., Kharif C., [Evolution of water waves generated by Subaerial solid landslide](#), *27th International Workshop and Water Waves and Floating Bodies (IWWWFB)*, Copenhagen, Denmark, 2012.
8. Cébron D., Moutou C., Le Bars M., Le Gal P., Fares R., [Tidal instability in exoplanetary systems evolution](#), *EPJ Web of Conferences*, **11**, 03003, 1-7, 2011.
7. Sauret A., Cébron D., Le Bars M., Le Dizès S., [Génération d'un vent zonal par libration](#), *20eme Congres Francais de Mecanique*, Besançon, France, 2011.
6. Cébron D., Herreman W., Le Bars M., Le Dizès S., Le Gal P., Maubert P., Verhille G., [Instabilité elliptique sous champ magnétique](#), *20eme Congres Francais de Mecanique*. Besançon, France, 2011.
5. Cébron D., Herreman W., Le Bars M., Le Dizès S., Le Gal P., Maubert P., [Instabilités Magnéto-Inertielles](#), *19eme Congres Francais de Mecanique*. Marseille, France, 2009.
4. Cébron D., Herreman W., Le Bars M., Le Dizès S., Le Gal P., Maubert P., [Instabilités Magnéto-Inertielles](#), *12eme Rencontre du Non Lineaire*, Paris, 41-46, 2009.
3. Cébron D., Sigrist J-F., Soyer V., Ferrant P., [Validation Test Cases for Multi-Physic Problems: Application to Magneto-Hydrodynamic Numerical Simulations](#), *Proceedings of the ASME PVP conference* (Ed. M.P. Paidoussis), **4**, 283-292, 2008.
2. Cébron D., Sigrist J-F., [Toward a 2D SPH multiphysic code with solid-solid & fluid interactions for industrial related problems](#), *Proceedings of the 8th Int. Conf. on Hydrodynamics*. Nantes, France, 2008.
1. Gaurier B., G. Germain G., Cébron D., [Wake effects characterization using wake oscillation model. Comparison on 2D response with experiments](#), *Proceedings of the 8th International Conference on Hydrodynamics*. Nantes, France, 2008.

Refereed book chapter

1. Wicczorek M.A., Weiss B.P., Breuer D., Cébron D., Fuller M., et al. Lunar magnetism, *accepted in New Views of the Moon 2 book*.

Popular science articles

3. Gattacceca J., Cébron D., Wicczorek M.A., [Une plongée dans les entrailles de la lune](#), *L'astronomie*, **129**, July 2019.
2. Cébron D., M. Le Bars, Wicczorek M.A., [Le magnétisme de la Lune](#), *Pour la Science*, **424**, February 2013.
1. Boisson J., Cébron D., Moisy F., Cortet P.P., [Un pendule de Foucault fluide](#), *Reflets de la Physique*, **21**, p. 22, 2012.