

## Emmanuel Dormy

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### List of publications

- Peer Rev. 55.- Oruba L., Davidson P., Dormy E. (2018) Formation of eyes in large-scale cyclonic vortices *Phys. Rev. Fluids* **3**, 013502.
- 54.- Dormy E., Oruba L., Petitdemange L. (2018) Three branches of dynamo action *Fluid Dyn. Res* in press.
- 53.- Garcia F., Oruba L., Dormy E. (2017) Equatorial symmetry breaking and the loss of dipolarity in rapidly rotating dynamos *Geophys. Astrophys. Fluid Dyn.* **111**(5), 380-393.
- 52.- Oruba L., Soward A.M., Dormy E. (2017) Spin-down in a rapidly rotating cylinder container with mixed rigid and stress-free boundary conditions *J. Fluid Mech.* **818**, 205-240.
- 51.- Oruba L., Planes S., Siu G., Chancerelle Y., Dormy E. (2017) Rapid Oceanic Response to Tropical Cyclone Oli (2010) over the South Pacific *J. Phys. Ocean.* **47**(2), 471-483.
- 50.- Oruba L., Davidson P.A., Dormy E. (2017) Eye formation in rotating convection *J. Fluid Mech.* **812**, 890-904.
- 49.- Cameron A., Raynaud R., Dormy E. (2016) Multi-stage high order semi-Lagrangian schemes for incompressible flows in Cartesian geometries *Int. J. Numer. Meth. Fluids*, **82**, 879-892.
- 48.- Marcotte F. Soward A., Dormy E. (2016) On the equatorial Ekman layer *J. Fluid Mech.* **803**, 395-435.
- 47.- Dormy E. (2016) Strong-field spherical dynamos *J. Fluid Mech.* **789**, 500-513.
- 46.- Garcia F., Sánchez J., Dormy E., Net M. (2015) Oscillatory convection in rotating spherical shells: Low Prandtl number and non-slip boundary conditions *SIAM Journal on Applied Dynamical Systems (SIADS)* **14**(4), 1787-1807.
- 45.- Bouya I., Dormy E. (2015) Toward an asymptotic behaviour of the ABC dynamo *EPL (Europhysics Letters)* **110**, 14003.
- 44.- Raynaud R., Petitdemange L., Dormy E. (2015) Dipolar dynamos in stratified systems *Monthly Notices of the Royal Astronomical Society (MNRAS)* **448**, 2055-2065.
- 43.- Oruba L., Dormy E. (2014) Transition between viscous dipolar and inertial multipolar dynamos *Geophysical Research Letters* **41** Issue 20, pages 7115-7120.
- 42.- Raynaud R., Petitdemange L., Dormy E. (2014) Influence of the mass distribution on the magnetic field topology *Astronomy & Astrophysics* **567**, A107.
- 41.- Oruba L., Dormy E. (2014) Predictive scaling laws for spherical rotating dynamos *Geophys. J. Int.* **198**, 828-847.
- 40.- Schrunner M., Petitdemange L., Raynaud R. and Dormy E. (2014) Topology and field strength in spherical, anelastic dynamo simulations *Astronomy & Astrophysics* **564**, A78.
- 39.- Mishra P., Gissinger C., Dormy E., Fauve S. (2013) Energy transfers during dynamo reversals *EPL (Europhysics Letters)* **104**, 69002.
- 38.- Petitdemange L., Dormy E., Balbus S. (2013) Axisymmetric and non-axisymmetric Magnetostrophic MRI modes *Physics of the Earth and Planetary Interiors* **223**, 21-31.
- 37.- Bouya I., and Dormy E. (2013) Revisiting the ABC flow dynamo *Physics of Fluids* **25**, 037103.
- 36.- Raynaud R., and Dormy E. (2013) Intermittency in spherical Couette dynamos *Physical Review E* **87**, 033011.
- 35.- Schrunner M., Petitdemange L., and Dormy E. (2012) Dipole collapse and dynamo waves in global direct numerical simulations *Astrophysical Journal (ApJ)* **752**, 121.

- 34.- Gissinger C., Petitdemange L., Schrunner M., and Dormy E. (2012) Bistability between Equatorial and Axial Dipoles during Magnetic Field Reversals, *Phys. Rev. Lett.* **108**, 234501.
- 33.- Morin J., Dormy E., Schrunner M., Donati J.F. (2011) Weak- and strong-field dynamos: from the Earth to the stars, *Monthly Notices of the Royal Astronomical Society: Letters*, **418**, 1, L133-L137.
- 32.- Schrunner M., Petitdemange L., Dormy E. (2011) Oscillatory dynamos and their induction mechanisms *Astronomy & Astrophysics*, **530**, A140.
- 31.- Gissinger C., Dormy E., Fauve S. (2010) Morphology of field reversals in turbulent dynamos *EPL (Europhysics Letters)*, **90**, 49001.
- 30.- Gérard-Varet D. and Dormy E. (2010) On the ill-posedness of the Prandtl equation *J. Amer. Math. Soc.*, **23**, 591–609.
- 29.- Soward A.M. and Dormy E. (2010) Shear-layers in magnetohydrodynamic spherical Couette flow with conducting walls, *Journal of Fluid Mechanics*, **645**, 145–185.
- 28.- Morin V. and Dormy E. (2009) The dynamo bifurcation in rotating spherical shells *International Journal of Modern Physics B*, **23** (28-29), 5467–5482.
- 27.- Pétrélis F., Fauve S., Dormy E., Valet J.-P. (2009) Simple Mechanism for Reversals of Earth’s Magnetic Field, *Physical Review Letters*, **102**, 144503.
- 26.- Gissinger C., Fromang S., Dormy E. (2009) Direct numerical simulations of the galactic dynamo in the kinematic growing phase, *Monthly Notices of the Royal Astronomical Society*, 394-1, L84–L88.
- 25.- Gissinger C., Dormy E., Fauve S. (2008) Bypassing Cowling’s Theorem in Axisymmetric Fluid Dynamos, *Physical Review Letters*, **101**, 144502.
- 24.- Goudard L., Dormy E. (2008) Relations between the dynamo region geometry and the magnetic behavior of stars and planets, *EPL (Europhysics Letters)*, **83**, 59001.
- 23.- Dormy E., Le Mouél J.L. (2008) Geomagnetism and the dynamo: where do we stand? *C. R. Physique*, **9**, 711–720.
- 22.- Petitdemange L., Dormy E., Balbus S. (2008) Magnetostrophic MRI in the Earth’s outer core, *Geophysical Research Letters*, **35**, L15305, doi:10.1029/2008GL034395.
- 21.- Gissinger C., Iskakov A., Fauve S., Dormy E. (2008) Effect of magnetic boundary conditions on the dynamo threshold of von Kármán swirling flows, *EPL (Europhysics Letters)*, **82**, 29001.
- 20.- Dormy E., Gérard-Varet D. (2008) Time scales separation for dynamo action, *EPL (Europhysics Letters)*, **81**, 64002.
- 19.- Gérard-Varet D., Dormy E. (2006) Ekman layers near wavy boundaries, *Journal of Fluid Mechanics*, **565**, 115–134.
- 18.- Teyssier R., Fromang S., Dormy E. (2006) Kinematic Dynamos using Constrained Transport with High Order Godunov Schemes and Adaptive Mesh Refinement, *Journal of Computational Physics*, **218**, 44–67.
- 17.- Morin V., Dormy E. (2006) Dissipation mechanisms for convection in rapidly rotating spheres and the formation of banded structures, *Physics of Fluids*, **18**, 068104-1-4.
- 16.- Iskakov A., Dormy E. (2005) On magnetic boundary conditions for non-spectral dynamo simulations, *Geophysical and Astrophysical Fluid Dynamics*, **99**-6: 481–492.
- 15.- Dormy E., Manda M. (2005) Tracking Geomagnetic Impulses Down to the Core-Mantle Boundary, *Earth and Planetary Science Letters*, **237**:300–309.
- 14.- Iskakov A., Descombes S., Dormy E. (2004) An integro-differential formulation for magnetic induction in bounded domains: boundary element-finite volume method, *Journal of Computational Physics*, **197**:540–554.
- 13.- Morin V., Dormy E. (2004) Time dependent  $\beta$ -convection in Rapidly Rotating Spherical Shells, *Physics of Fluids*, **16**:1603–1609.

- 12.- Dormy E., Soward A., Jones C., Jault D., Cardin P. (2004) The onset of thermal convection in rotating spherical shells, *Journal of Fluid Mechanics*, **501**:43–70.
- 11.- Desjardins B., Dormy E., Grenier E. (2004) Boundary layer instability at the top of the Earth's outer core, *Journal of Computational and Applied Maths.*, **166**:123–131.
- 10.- Manda M., Dormy E. (2003) Asymmetric behavior of magnetic dip-poles, *Earth Planets Space*, **55**:139–151.
- 9.- Dormy E., Jault D., Soward A. (2002) A super-rotating shear layer in magnetohydrodynamic spherical Couette flow, *Journal of Fluid Mechanics*, **452**:263–291.
- 8.- Christensen U. et al. 16 auteurs (2001) A numerical dynamo benchmark, *Physics of the Earth and Planetary Interior*, **128**-1-4:25–34 [erratum dans *Phys. Earth Planet. Int.*, **172**, 356, (2009)]
- 7.- Desjardins B., Dormy E., Grenier E. (2001) Instability of Ekman-Hartmann Boundary Layers, with application to the fluid flow near the Core-Mantle Boundary, *Physics of the Earth and Planetary Interiors*, **123**-1:15–27; **124**-3:283–294.
- 6.- Dormy E., Valet J.-P., Courtillot V. (2000) Numerical Models of the Geodynamo and Observational Constraints, *Geochemistry, Geophysics and Geosystems (G<sup>3</sup>)*, **1**:62.
- 5.- Dormy E. (1999) An Accurate Compact Treatment of Pressure for Colocated Variables, *Journal of Computational Physics*, **151**:676–683.
- 4.- Desjardins B., Dormy E., Grenier E. (1999) Stability of Mixed Ekman-Hartmann Boundary Layers, *Nonlinearity*, **12**-2:181–199.
- 3.- Dormy E., Cardin P., Jault D. (1998) MHD flow in a slightly differentially rotating spherical shell, with conducting inner core, in a dipolar magnetic field, *Earth and Planetary Science Letters*, **160**-1-2:15–30.
- 2.- Aurell E., Dormy E., Frick P. (1997) Binary tree models of high-Reynolds-number turbulence, *Physical Review E*, **56**-2:1692–1698.
- 1.- Dormy E., Tarantola A. (1995) Numerical Simulation of Elastic Wave Propagation Using a Finite Volume Method, *Journal of Geophysical Research*, **100**, B2:2123–2133.

Books:

- 3.- “Self-Exciting Dynamos in Fluids”, H.K. Moffatt & E. Dormy, Cambridge University Press, 2019 (520 p).
- 2.- “Mathematical Aspects of Natural Dynamos”, E. Dormy & A. Soward (Eds), CRC press, 2007, paperback edition in 2019 (504 p).  
Editor and co-author of two chapters in this book : “Governing Equations” with Benoît Desjardins, “Boundary layers and waves” with Andrew Soward.
- 1.- Encyclopedia articles: Dormy E., Roberts P.H., Soward A.M., “Boundary layers in the core”, Encyclopedia of Geomagnetism and Paleomagnetism, Gubbins D. & Herrero-Bervera E. (Eds), Springer 2007.

Others

- 4.- Dormy E. (2011) Stability and bifurcation of planetary dynamo models *J. Fluid Mech.*, Focus, vol. 688, pp. 1-4.
- 3.- Dormy E. (2006) The origin of the Earth's magnetic field: fundamental or environmental research?, *Europhysics News*, 37/2, 2006.
- 2.- Dormy E., Nataf H.-C., Pinton J.-F. (2005) L'effet dynamo, un casse-tête non-linéaire, *Images de la Physique 2005*.
- 1.- Dormy E. (1996 & 2002) Introduction aux expériences numériques, *Revue du Palais de la Découverte*, **24**, 235:27–41 (1996) [reprinted in full in *Découverte*, **294**:30–44 (2002)].