

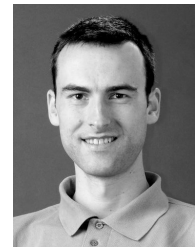
# Éric BUCHLIN

Born 16 August 1978, MULHOUSE, France

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## Scientific interests

Physical processes in the solar corona and the heliosphere.  
Statistical analysis of observations and numerical simulations data.  
Magnetohydrodynamics, turbulence and intermittence.

## Current position

**Since 2008** CNRS Researcher at Institut d'Astrophysique Spatiale (IAS), Orsay, France.

**Since 2014** MEDOC (CNES/CNRS-INSU/Univ. Paris-Sud) Scientific Director.

## Employment history

**2007–2008** Research assistant at IAS.

**2006–2007** Research associate, Imperial College, London, UK, working with Peter Cargill.

**2004–2006** Post-doctoral fellow, University of Florence, Italy, working with Marco Velli.

**2001–2004** PhD thesis, under the supervision of Jean-Claude Vial (IAS, Univ. Paris Sud) and Marco Velli (University of Florence, Italy), on the subject *Signatures and models of small-scale turbulent coronal heating*.

## Education

**2000–2001** DEA (advanced graduate class) *Astrophysics and Instrumentation*, Univ. Pierre et Marie Curie, Paris (rank : 1<sup>st</sup>).

**1999–2000** Maîtrise (M.S.) Physics, Univ. Pierre et Marie Curie.

**1998–1999** Licence (B.A.) Physics, Univ. Pierre et Marie Curie.

**1998–2002** École Normale Supérieure (ENS), Paris.

**1996–1998** Two-year preparation (mathematics, physics) for admission at ENS (competitive exam).

**1996** Baccalauréat, Sciences.

**Languages** French : mother tongue ; English : fluent ; German and Italian.

**Computer skills** Programming in C, C++, Python, Fortran, IDL ; parallel computing (MPI) ;  $\LaTeX$ , XHTML, CSS, XSLT. Unix and Windows system administration.

## Awards and fellowships

**2007–2008** Post-doctoral Fellowship from Centre National d'Études Spatiales.

**2004–2006** European contract "Marie Curie" (5th Framework Program, Improving Human Potential), in the network *Theory, Observations and Simulations of Turbulence in Space Plasmas*.

**2004** Young Scientist's Travel Award for Europeans (YSTA), to participate to the EGU assembly.

**2002** Travel grant of the *Univ. Franco-Italienne* for completing PhD in both France and Italy.

**2002–2004** Research and teaching grant (*allocation couplée* : PhD scholarship, with teaching duties), at Univ. Paris Sud, Orsay.

**1998–2002** Full scholarship at the École Normale Supérieure (ENS), Paris.

**1996** Ranks 3 (in Physics) and 7 (in Mathematics) at *Concours général* (French national competitive exam for the best high school students)

## Selected publications

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See full list at [http://eric.buchlin.org/cv/pub\\_buchlin\\_en.pdf](http://eric.buchlin.org/cv/pub_buchlin_en.pdf).

**Buchlin, E.** and Velli, M. (2007). Shell-models of RMHD turbulence and the heating of solar coronal loops. *Astrophys. J.*, 662, 701–714.

**Buchlin, E.**, Cargill, P. J., Bradshaw, S. J. and Velli, M. (2007). Profiles of heating in turbulent coronal magnetic loops. *Astron. Astrophys.*, 469, 347–354.

Verdini, A., Velli, M. and **Buchlin, E.** (2009). Turbulence in the sub-Alfvénic solar wind driven by reflection of low-frequency Alfvén waves. *Astrophys. J. Lett.*, 700, 39–42.

**Buchlin, E.** and Vial, J.-C. (2009). Electron density in the quiet solar transition region from SoHO/SUMER measurements of S VI line radiance and opacity. *Astron. Astrophys.*, 503, 559–568.

Galtier, S. and **Buchlin, E.** (2010). Exact nonlinear diffusion equations for anisotropic MHD turbulence with cross-helicity. *Astrophys. J.*, 722, 1977–1983.

**Buchlin, E.** (2011). Intermittent turbulent dynamo at very low and high magnetic Prandtl numbers. *Astron. Astrophys.*, 534, L9.

## Teaching

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### Courses Taught

- 2012–** Lecture on Turbulence and Applications, Master of Plasma Physics, Orsay (15 hr/yr).
- 2011–** Lab work : Data analysis of the Sun by UV spectroscopy, for the course *Instrumentation, diagnostics, signal processing*, Master of Plasma Physics, Orsay (8 hr/yr).
- 2009–2010** Lecture on solar physics, Master of Plasma Physics, Orsay (10 hr/yr).
- 2008–** Hands-on project for the course *Simulations numériques et calculs haute performance*, Astronomy doctoral school of Paris area (3 d/yr).
- 2008** Lecture on solar corona and wind heating, CNRS school on *Processus physiques dans l'héliosphère et contraintes observationnelles*, Cargèse, France (3 hr).
- 2006–2007** 3rd year physics laboratory, Imperial College, London : radiative transfer and turbulence in the atmosphere (65 hr).
- 2004** Organization and teaching of a  $\LaTeX$  class for IAS researchers.
- 2002–2004** Experimental physics, written exams, preparation for students' oral exams, at second-year university level (128 hr).
- 2001** Scientific aid for primary school teachers (*La Main à la Pâte*) with 30 hours of experimental physics in class.
- 2000–2002** Private lessons (high school level).

### Graduate Students

- 2016–** Advisor, PhD of Ping Zhang, Univ. Paris-Sud, Orsay.
- 2016** Co-advisor, internship of Baptiste Meylheuc (4 months).
- 2011–2015** Advisor, PhD of Vincent Joulin, Univ. Paris-Sud, Orsay.
- 2011** Examining committee member, PhD of Aurélien Canou, École Polytechnique, Palaiseau.
- 2008–2012** Co-advisor, PhD of Céline Boutry, Univ. Paris-Sud, Orsay, France.
- 2010** Advisor, internship of Selma Engin (4 months).

### Undergraduate Students

- 2010** Advisor, Romain Faubert (lattice-Boltzmann MHD model, 1.5 months).
- 2009** Advisor, Jean Teyssandier (bottleneck effect in turbulence, 1.5 months).
- 2009** Advisor, Adrien Revel (automated detection of solar filaments, 1.5 months).
- 2008** Advisor, Kevin Olivier (turbulent MHD dynamo effect, 1.5 months).

### Outreach

- 2011–** Various outreach activities for the laboratory's communication actions : publication of news on the website, visits and internships from schools, lab open day...
- 2004** Public outreach coordination for IAS during the Venus Transit.
- 1999–2002** President of the club of amateur astronomy of the École Normale Supérieure.

## Service

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Referee for *Astrophys. J.*, *Astron. Astrophys.*, *Nonlin. Proc. Geophys.*, *J. Turb.*, and conferences.

### At Institut d'Astrophysique Spatiale

- 2014– Member (nominated), Laboratory Council.
- 2011– Co-coordinator, Communication and Outreach Committee.
- 2010– Member, Computing Resources Users Committee.
- 2010–2013 Member (elected), Laboratory Council.
- 2001–2004 Member (elected), Laboratory Council.
- 2001–2004 Involvement in observation campaigns at MEDOC (IAS) : planner for the SUMER and CDS instruments onboard SoHO.

### At Univ. Paris-Sud

- 2013–2015 Member (deputy), Consultative commission of university specialists (CCSU) 29-34.
- 2013 Vice-chair, selection committee for assistant professor position 34MCF505.

### At Centre National d'Études Spatiales (CNES)

- 2013– Member, Sun-Heliosphere-Magnetospheres advisory group.

### At Centre National de la Recherche Scientifique (CNRS)

- 2014 Member, Coordination with Space Prospective advisory group (CNRS Astronomy & Astrophysics prospective).

### Professional Associations

- 2012– American Geophysical Union (AGU).
- 2011–2014 Association Bernard Gregory; board member (representing MCFA).
- 2009– International Astronomical Union (IAU).
- 2005– Marie Curie Fellows Association (MCFA); board member (2007–), treasurer (2008–).
- 2005– Association Nationale des Docteurs (ANDÈS).
- 2002– Société Française d'Astronomie et d'Astrophysique (SF2A).
- 1996– Association des Lauréats du Concours Général.

## Research Programs and Internships

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- 2007–2009 Member of the team “The role of spectroscopic and imaging data in understanding coronal heating” (PI : Susanna Parenti) of the International Space Science Institute (ISSI), Bern, Switzerland.
- 2005 Long-term participant in the program *Grand Challenge Problems in Computational Astrophysics*, Institute for Pure and Applied Mathematics, University of California, Los Angeles. Workshops on : *Astrophysical Fluid Dynamics*, *N-Body Problems*, *Relativistic Astrophysics*, *Transfer Phenomena*.
- 2001 *Statistical Properties of Solar Events Simulated by a Cellular Automaton*. Advisors : Sébastien Galtier and Jean-Claude Vial, IAS, Orsay. Numerical code, optimization, statistical analysis.
- 2000 *Recent Observations of an Equatorial Coronal Hole*. Advisor : Dr. Donald M. Hassler, Southwest Research Institute, Boulder, Colorado. Data calibration, reduction and analysis for a SOHO/SUMER observation campaign.
- 1999 (1 month) *Construction and Optimization of a Cylindrical Laser Beam to form Annular Optical Lattices*. Advisor : Philippe Verkerk, University of Lille, France.

## Other qualifications

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Running (up to marathon : Los Angeles 2005).