

Curriculum Vitae

Name : Barbara BIGOT

Birth : December 18, 1978 (France)

Office address : Space Science Center, Institute for the study of Earth, Ocean & Space (EOS),
245F Morse Hall, 8 College Rd,
University of New Hampshire, Durham, NH 03824 (USA).

Phone : (603) 862-2507

e-mail : barbara.bigot@unh.eu (barbara@artemis.sr.unh.edu)

Research interest

Main interest : Development of anisotropy in MHD ; characterization of transition between strong and wave (or weak) turbulence ; MHD modelisation of solar wind ; and coronal heating problem.

My area of research is dedicated to the theoretical, phenomenological and numerical study of turbulent astrophysical plasmas met in the natural anisotropic media such as solar corona, solar wind or interstellar medium. These plasmas are described by the fluid approximation of magnetohydrodynamic (MHD) in presence of uniform magnetic field. Many phenomenological, or theoretical, approaches predict different inertial behaviors for the energetic spectra of these anisotropic flows. The numerical simulation are thus essential to characterize the validity area of these predictions.

Key-words : Turbulence, Alfvén waves, anisotropic plasma, magnetohydrodynamics, fluid mechanics, solar physics.

Theoretical methods : Statistics, analytics, asymptotics et phenomenologicals.

Numerical methods : Parallel and vectorial numerical codes using a pseudo spectral method (FFT).

Professional experience

2009 – ... Research scientist II, Space Science Center, University of New Hampshire (USA).

Advisor : A. Bhattacharjee.

2008 – 2009 Teaching and research, Univ.of Nice Sophia-Antipolis and Cassiopée laboratory.

Advisor : H. Politano (Cassiopée Laboratory, Observatoire de la côte d'Azur - OCA).

2004 – 2008 PhD (defense day : April 10 2008).

Title : *Waves and turbulence in the anisotropic MHD flows : Solar applications.*

Advisors : S. Galtier (Institut d'Astrophysique Spatiale, Univ. of Paris-Sud 11)
and H. Politano (Cassiopée Laboratory, OCA).

Publications

Refereed articles :

- "Development of Anisotropy in Incompressible Magnetohydrodynamic Turbulence." **Bigot B.**, Galtier S. and Politano H.. *Physical Review E.*, **78**, pp 066301 (2008), 22 pages.
- "Anisotropic Turbulent Model for Solar Coronal Heating." **Bigot B.**, Galtier S. and Politano H.. *Astronomy & Astrophysic*, **490**, pp 325 – 337 (2008). 13 pages.
- "Energy Decay Laws in Strongly Anisotropic Magnetohydrodynamic Turbulence." **Bigot B.**, Galtier S. and Politano H.. *Physical & Review Letters*, **100(7)**, pp 074502 (2008). 4 pages.
- "Anisotropic fluxes and nonlocal interactions in magnetohydrodynamic turbulence." Alexakis A., **Bigot B.**, Galtier S. and Politano H.. *Physical Review E*, **76**, pp 056313 (2007). 8 pages.

Conference proceedings :

- “Anisotropy in three-dimensional MHD turbulence”. **Bigot B.**, Galtier S. and Politano H., 11th EUROMECH European Turbulence Conference, Porto, Portugal (2007).
- “Development of anisotropy in MHD turbulence”. **Bigot B.**, Galtier S. and Politano H., SF2A (2006).
- “Transition entre les régimes de turbulence faible et forte en MHD incompressible”. **Bigot B.**, Galtier S. et Politano H., 17th Congrès Français de Mécanique, Troyes (2005).

Conferences attended :

- Euro MHD 2008, 23th - September 26th 2008, Nice, France (talk).
- 11th European Turbulence Conference, June 25-28 2007, Porto, Portugal. (talk)
- GdR turbulence/dynamo, November 6-9 2006, Nice, France. (talk)
- Instabilities and Turbulence in MHD flows (Graduate summer school), July 25-1th 2006, Warwick, United-Kingdom.
- UK-MHD, June 8-9 2006, St Andrews, Scotland.
- GdR dynamo, March 27-28 2006, ENS Lyon.
- 14th Colloque A. Bouissy, February 23-24 2006, Univ. Paris XI, France. (poster)
- Journées des doctorants, September 30 2006, Observatoire de la Côte d’Azur. (talk)
- 17th Congrès Français de Mécanique de Troyes, August 29- Spetember 2 2005, Troyes, France. (talk)
- Journées des doctorants, March 8-9 2005, Institut d’Astrophysique Spatiale, France. (talk)
- GdR turbulence, November 25-26 2004, ENS, Paris.

Teaching experience

- 2009** *Quantic mechanics* : Pratical work (28h) to second- and third-year undergraduate students.
- 2008** *Electromagnetism* : Tutorials (26h) to second-year undergraduate students.
- 2008** *Hyrodynamics* : Lectures (12h) and tutorials (27h) to second-year undergraduate students.

Education

- 2003 – 2004** Master of Research (2nd year) of Physics of Plasma, University of Paris VI (UPMC).
- 2002 – 2003** Master of Research (2nd year) of Geophysic, IPGP, University of Paris VI (UPMC).
- 2001 – 2002** M.S. of Fundamental physic, University of Paris VI (UPMC).
- 2000 – 2001** B.S. of Fundamental physic, University of Paris VI (UPMC).