

Curriculum Vitae of Doris Folini

Personal data

Phone: ++41 44 632 33 72 (ETH Zürich)

e-mail: doris.folini@env.ethz.ch
doris.folini@ens-lyon.fr

web: <http://www.the-a-maze.net/people/folini/index.html>



Dates

- 2008 – Senior scientist, Institute for Atmospheric and Climate Sciences, ETH Zürich;
Research associate at Centre de Recherche Astrophysique, Lyon
- 2007 – 2008 Research associate at Laboratory for Air Pollution, EMPA Dübendorf
- 2005 Invitation by ERCOFTAC to teach a course on compressible turbulence and mixing
- 2003 – 2006 Ad interim head of modeling group, Laboratory for Air Pollution, EMPA Dübendorf
- 2002 Invitation by Observatoire Paris Meudon, France, to teach a course on astrophysical flows, radiative transfer, and associated numerical methods
- 2002 Qualification as university lecturer by French National University Counsel
- 2001 - 2002 Swiss National Science Foundation scholarship at Observatoire de Strasbourg, France
- 1998 PhD-thesis '*Computational approaches to multidimensional radiative transfer and the physics of radiative colliding flows*', ETH thesis No. 12606
- 1997 – 2000 Deputy system administrator for Unix at Institut für Astronomie, ETH Zürich
- 1993 – 2000 Research & teaching assistant, Institut für Astronomie, ETH Zürich
- 1993 – 2000 Research & teaching assistant, Seminar für Angewandte Mathematik, ETH Zürich
- 1988 – 1993 Studies in theoretical physics, ETH Zürich, award for best physics diploma in 1993
- 1975 – 1987 Elementary school in Schlieren (ZH), Freies Gymnasium Zürich, Maturität Typus C
- 1968 Born in Zürich on April 2

Skills

- **Physics:** Fluid dynamics, transport phenomena, radiation and (NLTE-) radiative transfer, atomic and statistical physics, stratified media, plasma physics, hydrological cycle of the atmosphere. Extensive research activity in astrophysics and atmospheric sciences.
- **Mathematics:** Partial differential equations, numerical mathematics, linear algebra, statistics, inverse problems, random processes.
- **Scientific Computing:** Large scale simulations and related code development, data handling, data analysis. Excellent expertise in different programming languages (fortran, C, IDL, matlab, python, R, csh, perl), visualization tools (paraview, VisIt, NCAR graphics), operating systems (Unix, Windows), and architectures (vector, parallel; OpenMP, MPI).
- **Scientific Management:** Co-PI of large user project (climate science) at the Swiss Supercompute Center, CSCS, Lugano, Switzerland. Lead of modeling activities of Air Pollution Lab, EMPA, 2003 - 2006. Adviser on modeling issues in various projects. Co-advisor of PhD projects.
- **Languages:** German (native), English and French (fluent), Italian and Spanish (colloquial).

Scientific interests

- **physically complex objects**, their analysis and simulation
- **turbulence**, compressible and incompressible, in homogeneous and stratified media
- **hydrological cycle and radiation balance**, of the Earth
- **turbulent diffusion**, pollution transport in the earth atmosphere, related **inverse problems**
- **high end numerical modeling**, development and use, for radiation-magneto-hydrodynamics, NLTE radiative transfer, reaction networks, self-gravity, the code package A-MAZE
- **physics and evolution of stars and planets**, and the chemical evolution of the universe

Teaching experience

- **Invited lecturer:** International summer schools at different levels. Topics include turbulence, flows, numerical and computational methods.
- **PhDs and semester works:** Topics include hydrodynamics and radiative transfer in astrophysics, global climate modeling, transport modeling in the earth atmosphere.
- **Teaching assistant:** Topics include simulations of astrophysical flows, numerical mathematics, linear algebra, group theory, discrete mathematics. Duties include: organizing, creating, and teaching exercises; creating and marking of exams; temporary replacement of lecturers.

Selected grants (as PI and Co-PI)

- 'Weather prediction & dispersion modeling' (COST 728), Co-PI, 2006-2009, 130 kFr
- 'Measurements of halogenated greenhouse gases' (Bafu), Co-PI, 2006-2009, 180 kFr
- 'Inverse modeling for European emission estimates' (internal F+E), PI, 2005, 50 kFr
- 'Measurements of halogenated greenhouse gases' (Bafu), Co-PI, 2003-2006, 200 kFr
- 'Alfvén-wave support of dwarf molecular clouds' (SNF), PI, 2001-2002, 80 kFr

Awards, diploma, courses

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| 2004 | Empa research award for Nature publication on European methyl chloroform emissions |
| 2003 | Short course in project management (3 days) |
| 2002 | Qualification as university lecturer (Maître de conférences) for astronomy and astrophysics by the French national university counsel |
| 1998 | PhD in physics, Dr.sc.nat, ETH thesis No. 12606, ' <i>Computational approaches to multidimensional radiative transfer and the physics of radiative colliding flows</i> ' |
| 1993 | Diploma in theoretical physics, ETH Zürich |
| 1993 | Award for best physics diploma, ETH Zürich |
| 1988 | Practical training at Landis & Gyr ('Werkstattgrundkurs' ETH, 6 weeks) |
| 1987 | Proficiency in English, University of Cambridge |
| 1987 | Maturität Typus C, Freies Gymnasium Zürich |

Other interests

Reading (literature, history, natural sciences), languages, hiking, gardening, traveling.