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## Preface

Since the first meeting in Lyon in 1986, the biannual European Turbulence Conferences have provided an informative survey of the international efforts in understanding turbulence in its fundamental and applied aspects. Now integrated into the conference cycles coordinated by the European Mechanics Society the meetings provide a regular forum for the exchange of ideas and the discussion of the latest developments. The more recent conferences in Barcelona (2000), Southampton (2002), Trondheim (2004), and Porto (2007) have attracted several hundred participants from 30 and more countries. The 12th meeting in this series, ETC 12, which was held in Marburg September 7-10, 2009, continues this tradition. Researchers from 34 countries submitted 336 abstracts to the conference. The number of submissions is somewhat lower than for the Porto or Barcelona meetings, but in line with the previous ones in Northern Europe.

The contributions that were presented in Marburg were selected by the international advisory board for the European Turbulence Conferences. The committee was chaired by Professor Arne V. Johansson (Stockholm) and consisted of Professors Helge I. Andersson (Trondheim), Konrad Bajer (Warsaw), Luca Biferale (Rome), Claude Cambon (Lyon), Hans-Hermann Fernholz (Berlin), Peter Davidson (Cambridge, UK), Yuri Kachanov (Novosibirsk), Detlef Lohse (Twente), Jose L. Palma (Porto), Jean-Francois Pinton (Lyon) and the local organizer.

Impressed by the high quality of the abstracts the committee selected 250 for oral presentation, corresponding to a record number of almost 75% of the submissions. In addition, 70 papers were selected for presentation in a poster and seminar session. These numbers attest to the healthy state of the field and the reputation the conferences have achieved.

As in previous years, the papers are grouped by the subfields as reflected in the sections given in the table of contents. Naturally, the level of activity in the subareas varies from conference to conference. For ETC12, the largest numbers of submissions were recorded for the areas of instability and transition, and wall bounded flows. These were closely followed by intermittency

and scaling, transport and mixing, vortex dynamics and structure formation, and geophysical and astrophysical turbulence, which received similar numbers of submissions. Further topics presented at the meeting include turbulence in multiphase and non-Newtonian flows, Lagrangian aspects, Large Eddy Simulations and related techniques, Magnetohydrodynamic Turbulence, control of turbulent flows, reacting and compressible flows as well as acoustics of turbulent flows.

The program of the meeting had the invited talks and the seminar session during which the posters were presented as plenary sessions, and the other contributed talks arranged in four parallel session of up to six talks per group. These proceedings are the written record of six invited talks, 211 contributed talks and 35 posters. They are grouped by the main topics and arranged in the order in which they were presented within the sessions.

The meeting would not have been possible without the unselfish support of the staff of the various departments of the Philipps-Universität Marburg, the assistance of Marburg Tourist and Marketing, and the Springer Verlag who publishes theses proceedings. Several exhibitors and organizations contributed to the budget of the meeting. Among them, I would like to mention the European Community, who within its program to support Cooperation in Science and Technology (COST) finances an activity on Particles in Turbulence. The opening meeting of this COST Action was held as part of the meeting. They all are to be thanked for their help in making this meeting possible and for promoting turbulence research in Europe.

Marburg, May 2009

*Bruno Eckhardt*

Advances in Turbulence XII

Proceedings of the 12th EUROMECH European  
Turbulence Conference, September 7-10, 2009,  
Marburg, Germany

Eckhardt, B. (Ed.)

2009, XXVII, 913 p. 900 illus., Hardcover

ISBN: 978-3-642-03084-0