An adequately designed vane vorticity meter with its η value very near to 1, after careful calibration and incorporated with the new data fitting method of the present study, can be an accurate, quantitative instrument for measuring streamwise vorticity.

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Conference report

International conference on laser anemometry: advances and application

16–18 December 1985, Manchester, UK

The UK LDA Users Group held its first international conference on laser anemometry at the University of Manchester in December 1985. The conference was organized by the UK LDA Users Group, sponsored by the University of Manchester and co-sponsored by the Institution of Mechanical Engineers, the Royal Aeronautical Society and the British Hydromechanics Research Association. A large field of papers of a high standard had been received and of the 38 papers presented at the conference, 16 were by overseas authors, with a similar proportion of overseas delegates. There were no parallel sessions and the quality of the papers and enthusiasm of the delegates could be judged by the high attendance levels at all sessions. The atmosphere of the conference was amicable and workmanlike and the local organizers must be congratulated both on the quality of the social and domestic arrangements and on running the proceedings to time!

The technical sessions of the conference were structured around five invited papers by internationally recognized authorities who had each been asked to address a particular aspect of laser anemometry. Mike Fingerson's introduction to fibre optics in LDA applications was the springboard for a group of papers demonstrating the considerable potential of fibre optics in radically altering our concept of optical systems design in terms of both miniaturization and the use of fibre optic phase modulators. Two authors described multipoint measurements using fibre optics to deliver and collect light at many points in the flow simultaneously. Preben Buchhave considered the design of 3D measurement systems and described the often conflicting requirements of a real example. A number of papers addressed the problems of making measurements in 3D and rotating flows and presented results from a variety of rotating flow structures. Les Drain discussed laser anemometry and particle sizing, providing an overview of the combined field of size and velocity measurement and describing the range of techniques that have been developed. LDA measurements in two-phase flows were presented by various authors who had examined water sprays in air, solid particles in a spouted bed and wet steam flows. Franz Durst's paper on turbulence quantities and Reynolds stresses in a pipe flow of polymer solutions discussed measurements in turbulent boundary layer flows and described the use of refractive index matching techniques to permit detailed study of the near wall region. This paper acted as the focus for a group of papers which considered a wide range of special applications varying from turbulent confined jets with recirculation to natural convection flows, from bluff body wakes to ribbed wall channel flow. Jim Whitelaw described a wide range of applications of laser anemometry to engine flows, both combustion studies for gas turbines and in-cylinder measurements in reciprocating IC engines. He also addressed the difficulties of making measurements of fuel droplet size in such flows. Other authors presented measurements made in furnaces and in motored reciprocating engines.

The LDA Users Group has broadened its field of interest, dropping the word Counter from its title and this was demonstrated by the large number of paper presenting aspects of instrumentation, signal processing and interpretation using frequency trackers, transient recorders, photon correlators and filter banks. The emphasis of this conference was on advances and application and the papers presented show the wide front of the advance. Although three papers were presented specifically on the topic of comparison between theoretical prediction and experimental measurement it does still seem that there is no general feedback into computational modelling of data obtained from turbulent flows using LDA. Perhaps this is a topic that will be addressed by authors at the next conference in this series.

The quality of the technical sessions was repeated in the excellent exhibition of instrumentation and equipment which included displays by the major manufacturers. The exhibitors had obviously taken a great deal of trouble to present the current state of their art and the stands were manned with the standard of erudition one has come to expect.

Copies of the Conference volume containing the invited papers and contributed papers may be obtained from Publications Sales, BHRA, Cranfield, Bedford, M43 0AJ, UK, at a price of £44.00 UK and EEC – £47.00 elsewhere.

Encouraged by the success of this first international conference, and the previous national symposium in 1982, the LDA Users Group has decided to hold the second international conference at the University of Strathclyde between 21 and 23 September 1987. A preliminary announcement has been made and a call for papers will follow very soon. The UK LDA Users Group continues to hold meetings several times yearly, acting as a forum for researchers concerned with the application of LDA. Further details can be obtained from UK LDA Users Group, c/o Department of Engineering, University of Manchester, Oxford Road, Manchester.

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