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MEASURING TECHNIQUES IN TRANSONIC AND SUPERSONIC CASCADE FLOW

PROCEEDINGS OF SYMPOSIUM AT C.E.R.L. ON MARCH 22-23, 1979

Editors

N.B. Wood and M.J. Moore

(Thermodynamics Section)

Approved by: M. J. Moore

p.p. Head of Engineering Sciences Division

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PREVIOUS MEETINGS IN THE SERIES

1. 1969, von Karman Institute, Brussels
   (Transonic cascades, overpressure, measurements behind cascades)

2. 1971, DFVLR-AVA, Goettingen
   (Choice of measurement location, unsteady effects from shock-boundary layer interaction)

3. 1974, ONERA, Paris
   (Comparison of probe types, probe blockage)

4. 1976, Ecole Polytechnique Fédérale de Lausanne
   (Probes, laser anemometry, new measuring techniques, unsteady effects)

SUMMARY

The papers contained in this publication were given at the 5th Symposium in the series initiated by V.K.I. in 1969, and held on this occasion at the Central Electricity Research Laboratories, Leatherhead, U.K., on 22nd and 23rd March, 1979.

Contributions were presented under the following headings:

Cascade probes and calibration

Cascade techniques

Cascade results

Three-dimensional and unsteady flow

Laser velocimetry

Wet steam.

CONTENTS

INTRODUCTION

The papers contained in this publication were presented at the 5th Symposium in the series initiated by V.K.I. in 1969, and since held at various venues (see list p.1). Once again, the meeting was truly international, with several participants each from Belgium, France, Germany, Switzerland, the U.K. and U.S.A. The common feature of the whole series has been the stress on informality of the proceedings and free discussion, although the greater number of contributions offered this year meant that in some sessions discussion was limited by the time available.

A glance at the contents list shows the range of topics covered, although the emphasis remained, rightly, on calibration and testing techniques. It was clear from the contributions that there are still difficulties in obtaining measurements with intrusive probes in transonic flows, and the steady development and growth of experience with laser velocimeters is encouraging.

A new departure for this meeting was the inclusion of a whole session on simulation of wet steam turbine flows, which incorporate the whole range of transonic, supersonic and three-dimensional effects, in addition to non-equilibrium phenomena.

Unfortunately, a few contributors were unable to provide written texts for inclusion in this publication, but for completeness all the papers presented are listed in the Appendix.

For the next meeting, two to three years hence, Monsieur G. Bois of Ecole Centrale de Lyon has kindly offered to act as host. There was some discussion at the conclusion of the present symposium on the desirability of limiting more strictly the topics to be included, to enable the small and informal nature of the series to be maintained, as well as to concentrate on the main problems which the series was originally intended to discuss. These details will have to be settled nearer the time by M. Bois in collaboration with the guiding spirit behind all the symposia, Professor Claus Sieverding.

Finally, as organisers, we should like to record our pleasure at playing host to the 5th Symposium, and hope that all participants found the meeting as fruitful and enjoyable as we did.

N.B. Wood
M.J. Moore