Published by the **Rutherford Laboratory**, Science Research Council, Chilton, Didcot, Oxon. UK

# Proceedings





**Conference on the Computation of Magnetic Fields** 

Oxford, 31 March to 2 April 1976

### **Proceedings**

of the

## COMPUMAG

Conference on the Computation of Magnetic Fields

St Catherine's College, Oxford 31 March - 2 April 1976

Sponsored by: The Science Research Council The Institute of Physics The Institute of Electrical and Electronic Engineers Inc., USA

Conference organised and Proceedings published by Rutherford Laboratory, Chilton, Didcot, Oxon 0X11 0QX, UK

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#### FOREWORD

The idea for this Conference arose from a desire by specialists in magnet computation at the Rutherford Laboratory to have discussions with their counterparts in industry and unversities. Usually in the past this particular topic has been submerged in meetings catering for the much wider field of magnet technology, i.e. Intermag and Magnet Technology conferences. That we were justified in arranging Compumag has been demonstrated by the enthusiastic response - over 200 participants from 15 countries.

Whilst the standard achieved in the Conference must be judged by the quality of the papers appearing in these Proceedings, it can be said that most aspects of the field were covered and the discussions both in and out of the formal sessions were very valuable. A highlight of the conference was the specially set up magnet design work station, based on a GEC 4080 computer linked to the Rutherford Laboratory's IBM 360/195 computer. A series of demonstrations using these facilities served to indicate the importance of computer aided graphics techniques in magnet design. In this connection I should particularly like to thank the teams from the Central Electricity Research Laboratories, Leatherhead, Imperial College of Science and Technology, London and the Rutherford Laboratory.

I must express my appreciation to the delegates, the invited speakers, and members of the various organising committees for their efforts in making the Conference a success and to Dr. G. Manning, deputy director of the Rutherford Laboratory, for making the opening address. Finally my thanks to the Science Research Council without whose support this Conference could not have taken place.

18th May, 1976

C W Trowbridge

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Magnetic Fields and Potentials of Linearly Varying Current or Magnetisation in a Plane Bounded Region

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A Generalised Finite Difference Method for the Computation of Electric and Magnetic Fields

Finite Element Approximation and Iterative Methods of Solution for 2-D Non-Linear Magnetostatic Problems

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Author

Electrical Engineering Dept., Southampton University, UK

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|-------|------------|
| Autho | <b>r</b> . |

D Howe, T G Phemister 301 C A Parsons & Co. Ltd., Newcastle on Tyne, UK

J Mulhaus 309 Central Electricity Research Laboratories, Leatherhead, NK

J C Nederlec 316 Ecole Polytechnique, Palaiseau, France

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