

and the LOS ALARIOS SCHENTIFIC LARORATORY under the auspices of EARDC and EACRY of OECD/ENEA

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## FOREWORD

Neutrons have been used as a research tool in the physical sciences for over twenty years. As in many technical fields, progress is accompanied by increasing sophistication and complexity of systems and inevitably leads to specialization and higher costs. Thus the seemingly simple questions, "What is to be done and how can it best be accomplished?", become more and more difficult to answer. Research physicists will of course continue to pose new problems, develop new techniques and request more varied and intense sources; design engineers, on the other hand, will continue to propose and develop more advanced and varied sources. One would hope that these two disciplines would join naturally to attain common goals and, indeed, this does occur both within laboratories and often between different organizations. It is most important to foster such cross-fertilization of ideas between related, but distinct, disciplines on as broad a foundation as possible, and international meetings serve this purpose.

When the European American Nuclear Data Committee and European American Committee on Reactor Physics proposed a Seminar on Intense Neutron Sources for research, it was clear that no common solution or approach, applicable to all needs, would be found. Nevertheless, the technical papers and discussions in these Proceedings contain the elements of the research problems of major interest today, along with the prospects for source designs to support and carry out this work.

Several trends seem to have emerged from the Seminar:

- recently designed and constructed steady state fission reactors are approaching the apparent limits of technology and economy;
- a healthy competition exists between advocates of continuous and pulsed fission systems, both from the research and design aspects;
- accelerators often exhibit a unique and sometimes complementary nature both as continuous and pulsed sources, and with and without fissionable-material "boosters";
- there is an increasing interest in solid state studies both in the investigation of the static (structure) and dynamic

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(vibrational states, etc.) characteristics of condensed matter.

The Editors have attempted to retain all of the technical arguments presented at the Seminar but, in the interest of conciseness, admit to editing of the discussions, often without consulting the speaker. Only in the case of the four Panels did contributors have a guaranteed opportunity to edit their own statements. The Scientific Secretaries of each Session and Panel contributed greatly to the preparation of these Proceedings. These Secretaries and the Editors are Staff Members of the Los Alamos Scientific Laboratory where the master manuscript was prepared.

Thanks are due to authors of the technical papers, to those who contributed to the discussions and panels, to the Scientific Secretaries and Session Chairmen, and to the local Organizing Committee who worked so diligently to make this a pleasant and profitable meeting. Lastly, thanks are due to the sponsoring agencies, the United States Atomic Energy Commission and the European Nuclear Energy Agency, and to the Los Alamos Scientific Laboratory for their generous support and encouragement.

> H.T. Motz and G.R. Keepin Co-editors

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