

1999 Fusion Summer Study

Opportunities and Directions in Fusion Energy Science for the Next Decade

Preface to the Proceedings

These *Proceedings* comprise the tangible technical outcome of the 1999 Fusion Summer Study. The Summer Study was organized into six working groups, and each working group prepared technical reports identifying “key issues” facing the advancement of fusion energy science and some of the “opportunities” to address these issues during the next-decade. During the first half of the workshop, issues and opportunities were discussed in detail by many small subtopical discussion groups and collectively in large plenary sessions. During the second half, the working groups prepared and debated comprehensive summaries describing the goals, issues, and directions of every part of the U.S. fusion program. Although many of the observations and findings of the working groups have appeared elsewhere in other contexts, these *Proceedings* are unique if for no other reason than the open and inclusive process by which they were generated. On several occasions, the contributions from a very large number of individuals were discussed word-by-word to form a collective expression of an entire subdiscipline of fusion research. We further note the authorship of these *Proceedings* comes from every major institution now participating in the U.S. fusion program.

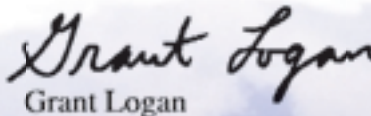
If there exists any reason to call the 1999 Fusion Summer Study a success, then it is due to three causes. First and most importantly, over 300 individuals from 12 countries attended the two-week workshop. Although there were occasions for enjoying renewal of contact with colleagues, for the most part, the working days were long and the discussions were intense. Perhaps the one quantitative evidence of our work is the number of xerox copies (90,000) and transparencies (1,200) consumed. We feel sincerely grateful for the hard work and perseverance of the Snowmass participants. Secondly, the Summer Study benefited immeasurably from wide institutional support. We are particularly grateful for the endorsements of the American Physical Society and the Fusion Energy Division of the American Nuclear Society. Finally, over 55 outstanding scientists and engineers served as working group convenors and subtopical group leaders. These colleagues labored over many months to develop the technical agenda for the Summer Study. They also served in vital roles as community leaders during the preparation of the final working group summaries.

These *Proceedings* present a lasting record of the observations of a large group of fusion experts of the opportunities to meet the challenges facing the development of fusion energy. However, these *Proceedings* do not capture important intangible outcomes. The Summer Study demonstrated that the broad fusion program can work together as partners for a common goal. The Summer Study gave voice to a very large number of diverse and individual scientists and engineers. It strengthened their involvement and, consequently, their commitment to the future direction of their fields. We hope that you will share our belief that we accomplished our objectives and, in the words of Hermann Gruner, helped to build “an environment for breaking down barriers and initiating an intellectual dialogue driven by science and fueled by enthusiasm.”

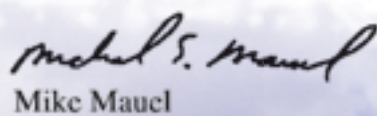


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