# PREFACE

These proceedings result from a small conference held in Honolulu, Hawaii, in April 1987. It was jointly sponsored by the U.S. National Science Foundation and the Japanese Society for the Promotion of Science, as one of a series of binational seminars. A previous seminar on this subject was held in Tokyo, Japan in 1982, and its proceedings were subsequently also published in *Solar Physics* as volume 86. The participants at the Honolulu meeting included probably a majority of the active scientists engaged in solar flare research in the two host countries, plus several distinguished participants from third countries. Because the attendance was limited, it cannot be claimed that this conference produced a comprehensive survey of all research in this field; nevertheless the subject range was diverse and interesting.

The full publication of conference proceedings of this type, including discussion, has an important role in advancing science somewhat different from normal scientific publication. The research papers in this volume were refereed according to usual *Solar Physics* standards, and these papers are comparable to the usual archival publication of research results. In addition there were reviews – both retrospective and forward-looking, and chosen by topic to be comprehensive – and also many "extended abstracts" of both orally presented papers and poster presentations. The abstracts serve to provide references to the broader literature and to serve as a focus for the transcribed discussions. The transcriptions of the discussion are essentially verbatim, with some editorial work to weed out redundancies and obvious trivialities. We hope that these discussions catch the true flavor of thinking at the frontier of understanding and interpretation of results in this field.

Finally, we should mention the major reason for organizing this conference at this particular phase of the solar cycle. During the last solar maximum of 1980-81 there was a variety of remarkable new findings about flare physics, and the present lull in activity allows us to reflect upon these discoveries and identify the problems that should be the focus of future research. The solar-flare community is eagerly anticipating the new observational programs for the solar maximum. These programs will include the Solar-A spacecraft, a project of the Japanese Institute for Space and Astronautical Sciences. This spacecraft carries both Japanese and foreign-supplied instrumentation, as described in this volume by Y. Ogawara. As the only dedicated satellite for solar-flare research in the forthcoming maximum – the third for which we will have been able to conduct extensive observations of the all-important high-energy flare radiation from above the Earth's atmosphere – Solar-A will necessarily serve as the keystone of all flare-research programs in the next decade. We hope and anticipate that these programs will include major new developments in ground-based observation and theory, and some of these new activities are also described in these proceedings.

In conclusion, we would like to thank the Institute for Astronomy of the University of Hawaii, and particularly Dick Canfield, for excellent hospitality and wonderful local arrangements.

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