Editors' Preface

The new field of EUV astrophysics has come of age. Since the first IAU sponsored conference on EUV astrophysics in 1989, the *EUVE* and *ROSAT* missions have completed the first all-sky EUV surveys. *EUVE* spectroscopy with 1 – 4 Å resolution has been obtained on about 100 objects in the EUV sky. Some observers have commented that EUV spectroscopy of other stars is now more advanced than EUV spectroscopy of the Sun.

When the current EUV missions were originally proposed, many reputable scientists argued that spending government funds on EUV astronomy was pointless; there would be nothing to see. There are now over 800 sources in the first all-sky EUV catalogues—more sources than existed in either the first-generation X-ray or gamma-ray catalogues. *EUVE* is currently discovering a new EUV source every few days.

EUV spectroscopy has now been carried out at 100 Å for a number of extragalactic objects, and EUV spectra at 700 Å have been obtained unexpectedly for B stars at 200 pc. Recent papers report EUV observations of the neutron star Geminga at 150 pc. And observations of EUV emission from stellar atmospheres and coronae reveal that no theoretical models fit the new data—our fundamental understanding must be revised.

As the papers in this book make clear, observational EUV astronomy is now providing intriguing insights and discoveries on a wide range of astrophysical phenomena—probing accretion disk physics, the energetics of stellar coronae, and the structures of hot stellar atmospheres in normal and compact objects.

Simultaneous observations are now being carried out with *EUVE* and the *Hubble Space Telescope*, X-ray observatories, and ground-based observatories, providing multi-wavelength data which elucidate the underlying emission mechanisms.

EUV observations of the local interstellar medium provide a detailed picture of the thermal and ionization conditions in the local ISM. At this time no consistent model of the local ISM can explain available EUV data coupled with data at other wavelengths.

A particular success of EUV astronomy has been the development of new observational probes to study helium in stellar atmospheres and in the ISM. Helium's primary absorption features, for both neutral and ionized helium, are in the EUV. *EUVE* has rightfully been called a "helium measuring" machine for the string of first reports of helium densities and ionization in Mars, the Comet Shoemaker-Levy impact on Jupiter, stellar coronae, cataclysmic variables, white dwarfs, B stars, and the ISM.

In the proceedings of the first EUV conference, we stated in our preface, "Will the current optimism reflected in these pages be borne out by the data soon to be obtained? Only the data will reveal the answer." And the answer, as shown in these pages, is a resounding *yes*. Yet ironically, at the time of writing, no space agency has new missions under development that would build upon these first-generation EUV missions. Whereas the fields of X-ray and infrared astronomy are about to embark on specialized fourth-generation follow-up missions, EUV astronomy may be entering an observational hiatus following the end of the *EUVE* and *ROSAT* missions. Perhaps this book will help emphasize the need for new EUV missions. We hope so.

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