Preface

Supernova and supernova remnant research are two of the most active fields of modern astronomy. SN 1987A has given us a chance to observe a supernova explosion and its aftermath in unprecedented detail, a process that continues to unfold today. Meanwhile, thanks to major advances in optical, radio, and X-ray astronomy, we have gained unprecedented views of the populations and spectrum evolution of supernovae of all kinds. These results have spurred a renaissance in theoretical studies of supernovae. Likewise, samples of well-observed supernovae are becoming large enough that we are closing fast on the goal of using supernovae to determine the cosmic distance scale.

Studies of supernovae and supernova remnants are inextricably linked and we are learning fast about the connections. We now recognize that mass loss from the supernova progenitor star can determine the structure of the circumstellar medium with which the supernova ejecta interact. An outstanding example is the ring around SN1987A. There are many supernovae in which much of the early optical, radio and X-ray emission are due to interaction of the ejecta with circumstellar matter rather than radioactivity within the supernova itself. Just in time for this colloquium, nature provided a particularly spectacular example of such an interacting supernova with SN1993J in M81, one of the brightest supernovae of this century. Moreover, the X-ray spectra of supernova remnants provide a powerful new tool to measure supernova nucleosynthesis yields.

It is particularly fitting that this colloquium took place in Xian, the ancient capital of China. The ancient records of supernovae comprise one of the great scientific contributions of classical Chinese civilization and remain valuable research tools for astronomers today. We were delighted that most of the world's leading experts on supernovae and supernova remnants came to Xian to report their work and to contribute to this volume, which we hope will provide a useful record of the exciting state of supernova research today.

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