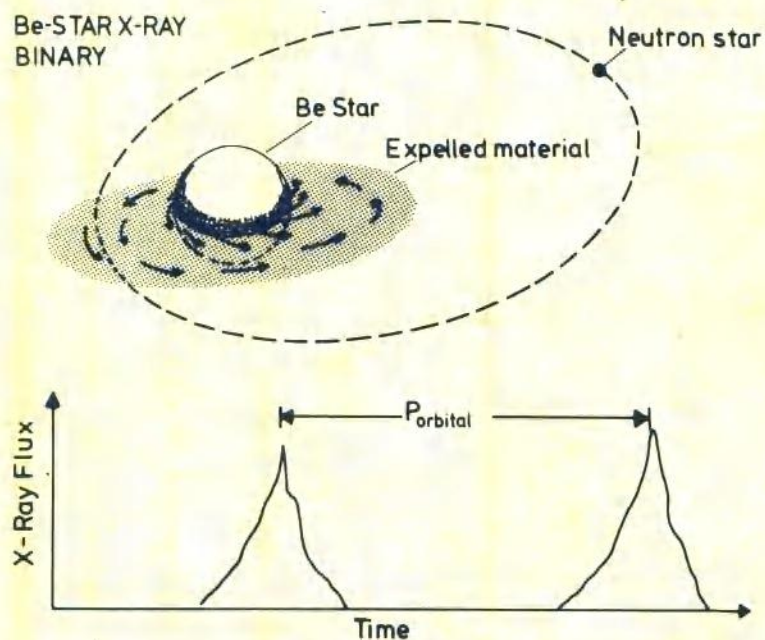


Physics of Be Stars

Edited by
ARNE SLETTEBAK
THEODORE P. SNOW



Physics of Be Stars

Proceedings of the 92nd Colloquium of the
International Astronomical Union,
Boulder, Colorado 18–22 August 1986

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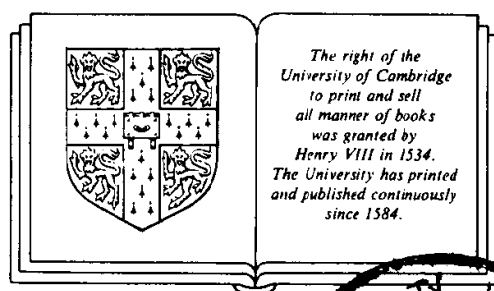
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PREFACE

The International Astronomical Union Colloquium No. 92 on the Physics of Be Stars was held on the campus of the University of Colorado in Boulder from August 18th through August 22nd, 1986. The Colloquium was officially sponsored by Commissions 29 (Stellar Spectra) and 45 (Stellar Classification) of the IAU, with financial support from the IAU, the National Science Foundation, the Ohio State University, and the University of Colorado. A total of 101 astronomers from 17 countries attended and participated in the Colloquium.

This is the third IAU conference on Be stars. We have seen Be-star research grow impressively during the years of the conferences, as Mirek Plavec outlines in his "Reflections on Be Stars and the Be Phenomenon" which concludes this volume. Very briefly, IAU Symposium No. 70, held on Cape Cod, U.S.A. in September 1975, featured the first ultraviolet observations with the Copernicus satellite, with strong evidence for stellar winds and mass loss from Be stars. Infrared and polarization measurements were also relatively new, but observations of all types generally were of a sporadic nature. In addition to stellar wind models, the binary model for Be stars was discussed at great length. The second Be star conference took place about six years later: IAU Symposium No. 98 in Munich, Germany in April 1981. The IUE satellite had been in operation for three years at that time and there were many papers on stellar winds, mass loss, and superionization in Be stars. X-ray observations were now available and Be star binaries with neutron star companions were shown to constitute a major class of X-ray binaries. In addition to sporadic observations, coordinated observing programs were described as well as simultaneous observations in different wavelength regions. Important new models for Be stars discussed in Munich included coronal models and the non-radial pulsator. The present proceedings of IAU Colloquium No. 92, coming some five years after the Munich Symposium, include many new observations of Be stars, some new models, and a great deal of discussion of both. We have no final answers as yet but progress is clearly being made on many fronts.

The planning for this Colloquium originated within the Working Group for Be Stars, which is a Working Group of IAU Commissions 29 and 45. We thank Commission Presidents J. Jugaku (29) and V. Straizys (45) for their support in agreeing to co-sponsor this Colloquium. The Scientific Organizing Committee for IAU Colloquium No. 92 is essentially the Scientific Organizing Committee of the Working Group for Be Stars for 1982-85, with the addition of Drs. Marlborough, Snow, and Tutukov. We are extremely grateful to all the members of the SOC (as well as many other members of the Be-star community) for their many ideas and input toward the organization and planning for the Colloquium.

The structure of this Colloquium is based on a framework of review papers, followed in each case by the relevant contributed papers. These proceedings follow this structure essentially in the order presented at

the Colloquium, with a few exceptions where we believe contributed papers might appear more logically than it was possible to place them in Boulder.

The program was a full one, with 18 review papers and 63 contributed papers, and we owe a debt of gratitude to the chairpersons of the sessions who kept us all on schedule. These were J. Castor, P. Conti, C. de Loore, A. Feinstein, K. Garmany, A. M. Hubert, E. Mendoza, and R. Stalio. We also thank Dr. James Corbridge, Chancellor of the University of Colorado, who opened the Colloquium by welcoming the participants.

Financial help provided by the IAU and the National Science Foundation provided partial travel funds or per diem expenses for 29 participants. We are grateful to Dr. D. McNally, Assistant General Secretary of the IAU, and Dr. P. Pesch, Astronomy Division of the NSF, for their help and cooperation.

The Ohio State University provided generous support for the Colloquium in the form of large mailings and secretarial assistance over a period of several years. We thank Dr. E. R. Capriotti, Chairman of the Department of Astronomy, and Delores Chambers, Secretary of the Perkins Observatory, for their help and cooperation.

The University of Colorado contributed to the logistical arrangements in several ways. The Joint Institute for Laboratory Astrophysics provided the use of its lecture room for the main sessions, and the Laboratory for Atmospheric and Space Physics made a room available for the poster displays. The Center for Astrophysics and Space Astronomy, the principal sponsoring institution, provided numerous support services and made available its staff members Sue Barnes and Cynthia Anderson, who were cheerful and constant sources of assistance in preparing for the conference and in making it run smoothly. The University's Office of Conference Services, especially Scott Reed, ably handled all the arrangements for registration, housing, receptions, coffee breaks, and the special outings. Several graduate students carried out the major logistical tasks of manning the projection booth, distributing and collecting comment forms, and recording the panel discussion. These students were coordinated by Karen Bjorkman, who deserves a great deal of the credit for a smoothly-run conference. Working with Karen were Marsha Allen, Jesse Doggett, Phil Jones, Steve McCandliss, Jim Neff, Mike Talcott, and Michael Van Steenberg.

Finally, it is a pleasure to thank all of the participants for their friendly cooperation before and during the Colloquium and in preparing these proceedings for publication.

October, 1986

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I. DEFINITIONS AND TERMINOLOGY