

ELECTROMAGNETIC RADIATION IN SPACE

ASTROPHYSICS AND SPACE SCIENCE LIBRARY

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VOLUME 9

ELECTROMAGNETIC RADIATION IN SPACE

PROCEEDINGS OF THE THIRD ESRO SUMMER SCHOOL
IN SPACE PHYSICS, HELD IN ALPBACH, AUSTRIA,
FROM 19 JULY TO 13 AUGUST, 1965

Edited by

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PREFACE

The subject of this volume in the Astrophysics and Space Science Library is Electromagnetic Radiation in Space. It is essentially based on the lectures given at the third ESRO Summer School which was held from 19 July to 13 August, 1965, in Alpbach, Austria. Fifty-eight selected students attended the courses representing the following countries: Austria (2), Belgium (1), Denmark (1), France (12), Germany (10), Italy (7), Netherlands (2), Spain (4), Sweden (6), Switzerland (3), United Kingdom (9), United States (1). Thirteen lectures courses and nine seminars were given by sixteen different scientists in total.

In this book the courses and seminars have been classified in three parts according to the kind of radiation which they mainly deal with: Ultraviolet Radiation, X-Radiation and Cosmic Radiation. These parts can be broken down further in theoretical and observational aspects, whereas in the first and second part solar as well as stellar ultraviolet- and X-radiation can be distinguished.*

Due to various reasons the publication of this volume had to be delayed; it was therefore judged appropriate to bring the text up to date.

The various lecturers have been asked to revise the manuscripts and to eventually add new information which has been acquired in this rapidly evolving field of space astrophysics. Most authors have responded positively to this request, some even have completely rewritten the manuscript.

In the first place this book is intended for students who want to obtain insight in the theory of the various production mechanisms of electromagnetic radiation from space and in its properties. Also post graduate students and space scientists and engineers will find much of their interest in this volume.

Since instrumentation plays such a large role in the space sciences most papers include a few sections on it, giving also recent results of experiments with balloons, rockets en satellites, while some are exclusively dealing with this aspect.

An extensive subject index has been incorporated and the reader who wants to study the original papers on special subjects will find numerous references at the end of each article.

* The lectures given Prof. S.R. Pottasch: On the theory of solar ultraviolet radiation; Prof. Dr. L. Biermann: Theoretical aspects of extraterrestrial X-rays of non-solar origin, and the seminars on Aspects of the LAS project by Prof. Dr. R. Lüst, Prof. Dr. C. de Jager and Dr. R. Wilson, as well as the seminar by Dr.H.E. Hinteregger: Some results and problems of observed solar extreme uv radiation are not published in this volume.

The editor would like to thank the students who have drawn up the first lecture notes, and the lecturers who have adapted these notes to the latest available information.

Utrecht, December 1967

J. G. EMMING

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