

## BOOK REVIEW

**Space Physics. An Introduction to Plasmas and Particles in the Heliosphere and Magnetospheres**, by May-Britt Kallenrode. Springer-Verlag, Berlin–Heidelberg–New York–London–Paris–Tokyo–Hong Kong, 1998, 375 pages. ISBN 3 540 64126 2. £45.50.

The heliosphere and planetary magnetospheres provide a wonderful natural plasma physics laboratory, our knowledge of which is being extended all the time by detailed satellite observations. Any plasma physicist looking for interesting problems will find a wealth of phenomena – solar flares, the aurora high-energy particles, bow shocks, to list but a few – whose detailed mechanisms are by no means fully understood. For anyone seeking an introduction to the subject, May-Britt Kallenrode provides a very welcome and accessible guided tour through the plasma-related aspects of the solar system.

After a survey of the necessary basic plasma physics, the main part of the book begins with the Sun and the solar wind, which, of course, provide the driving force for many of the processes taking place in the magnetospheres of our own and other planets. Throughout the book, the emphasis is on a clear description of the essential physical processes taking place. For those who wish to pursue the underlying theory and mathematics in greater depth, a good bibliography is provided. From the Sun we progress to interplanetary shocks and particle acceleration, and then to the terrestrial magnetosphere. There is an interesting chapter on the influence of solar cycle variations on climate, surveying some of the issues in this complex and controversial field and their relevance to current discussions on climate change. Finally there is a chapter on instrumentation, so that we know how all this fascinating information on what is happening above the atmosphere is obtained.

Coming to the book as someone with an interest in space physics, but not a detailed specialist knowledge, I found it to be a very interesting description of the current state of knowledge, the main outstanding problems and, also, something of the historical development of our understanding of the solar system. I can recommend it as an introduction and guide to this fascinating subject.

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