Exoplanets

by Sara Seager (Ed), assisted by Renée Dotson, with 34 collaborating authors

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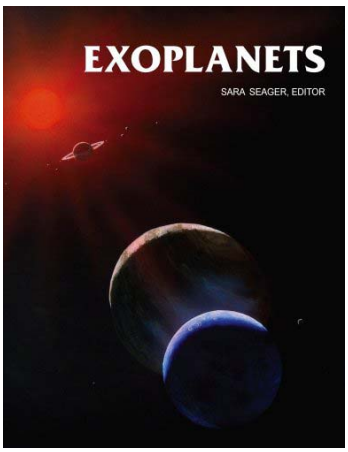
Exoplanets, the thirty-seventh and latest offering in the Space Science Series published by the University of Arizona Press in collaboration with the Lunar and Planetary Institute, is something of a landmark publication. The series, produced under the general editorship of Richard P. Binzel, reviews the current knowledge and understanding of a specific area of astronomy involving our own solar system and related planetary systems, written by astronomers working at the forefront of their subject.



The science of extrasolar, or exoplanets is a relatively late arrival on the astronomical stage, being less than twenty years old, and is unique in that it covers not only planetary science and astrophysics, but also many other disciplines such as chemistry, geophysics, quantum mechanics and even microbiology.

Enough time has passed for the science to have sufficiently developed that an encyclopaedic book like *Exoplanets* can be produced. It tackles the entire range of exoplanet topics, both observation and theory, in a sound technical manner written at the graduate student level. Each of the 20 stand-alone chapters has a different lead author and covers the fundamentals, development and recent advances in a field in such a way as to serve both as a review article and as a textbook. Scientific accuracy is ensured through a peer review process in the way that scientific papers are normally dealt with.

As a reference text for anyone wishing to learn the present 'state of the art', this book contains a wealth of definitive information reviewing observing techniques, orbits and dynamics, formation and evolution, and the planets' physical characteristics, written by researchers active in their field of study. For the amateur astronomer, the four chapters on exoplanet transits and occultations, microlensing, radial velocity techniques and direct imaging should prove especially appealing. The latest insights into the formation and structure of our own 'Mark I' solar system, both planets and other smaller bodies, as well as many types of other planetary systems are to be found in chapters on protoplanetary and debris discs, terrestrial planets and giant planets. The prospects for discovering Earth-like planets elsewhere, and especially for life existing beyond the solar system, are considered in the penultimate chapter. The last contribution considers atmospheric circulation and possible climates on exoplanets.

Since the book includes basic and advanced theory as well as the results of frontier research on exoplanets, many readers will find the overall approach to be rather technical in nature and may be discouraged by the liberal use of equations throughout. However such equations permit a complete mathematical description of the various aspects of exoplanet research and are to be expected in a book like this. Readers are not required to learn them by rote or fully comprehend them as they are included for reasons of completeness, and it is easy enough to skip most of the equations without losing the flow.

As has come to be expected from this book series, a consistently high standard and uniform style of English is utilised throughout. The archival quality paper also adds to the quality feel of the volume. Researchers will appreciate the way in which most chapters are comprehensively referenced as an aid to further reading. I might also add that I was pleasantly surprised by the price of this book: normally you might expect to pay considerably more for a standard work of this kind. No significant errors were found in the text, which is to be recommended to all serious students of the subject.

Richard Miles

Dr Richard Miles is a past-President of the Association and is currently Director of the Asteroids and Remote Planets Section.