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A guide to understanding the night sky

Visual Astronomy

A guide to understanding the night sky

Panos Photinos

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Preface

Successful space missions and technological advancements in communications have, in a way, brought the Cosmos closer to us. The data from various space missions are readily available to the public, and reliable sources offer a wealth of information including coordinates, distances, magnitudes and other properties of astronomical objects. Also, a quick Internet search would show a wealth of images of astronomical objects, near and far. There are beautiful images of the Sun, of galaxies and of nebulae that have inspired many artists, and understandably so. Some of these images are artworks in their own right! In terms of backyard astronomy, technological advances bring us affordable telescopes, with cameras and software that make it very easy to point the telescope to a celestial object and observe or photograph it.

This book is intended for a general audience, with no special background in mathematics or science. The main objective of the book is to provide a concise and self-contained introduction to the basic concepts of observational astronomy. The intent is to help the reader understand the information presented in various resources, and what this information tells us about the motion patterns and appearance of the night sky.

The approach I have adopted is conceptual and mostly qualitative, and the chapters are self-contained as much as possible. Relevant quantitative aspects are included in the appendices for readers who would be interested in numerical specifics. The discussion is more focused on what is accessible to visual observation, primarily members of the Solar System and visible stars. In the case of stars, I have included discussion of absorption spectra, and made quick mention of the wealth of information that can be extracted. I believe it is important to make the reader aware of the method, at least to the level of dispelling the mystery/misconception surrounding these issues.

As is the case with books on astronomy, the distances in all diagrams are not to scale, and the numbers, including properties of nearby stars, are revised frequently. There is little one can do about the scale, other than reminding the reader. Regarding the numerical values, I have made an effort to indicate the approximate nature of the quantities listed.

This book originated from my lecture notes in introductory astronomy classes and practical observation assignments. In preparing the book I had the benefit of listening to students' questions, and learning something about their 'own universe'. In my experience as a teacher, the most encouraging sign is when the student begins to ask questions. I would consider my task successfully accomplished if, for each answer the reader finds in this book, a new question is created in his/her mind.

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Author biography

Panos Photinos



Panos Photinos is a professor of physics at Southern Oregon University (SOU), where he teaches Introductory Astronomy, Observational Astronomy and Cosmology. Prior to joining SOU in 1989 he held faculty appointments at the Liquid Crystal Institute, Kent, Ohio; St. Francis Xavier, Antigonish, Nova Scotia, Canada; and the University of Pittsburgh, Pennsylvania. He was visiting faculty at the University of Sao Paulo, Brazil; the University of

Patras, Greece; Victoria University at Wellington, New Zealand; and the University of Melbourne, Australia. Panos completed his undergraduate degree in physics at the National University of Athens, Greece, and received his doctorate in physics from Kent State University, Kent, Ohio. He started naked-eye observations as a child in the Red Sea, and later upgraded to a pair of Merchant brass binoculars in Alexandria, Egypt, and in his homeland, the island of Ikaria, Greece. Ever since he has visited and stargazed from all five continents, and shared his fascination with the night sky with students of all ages. He lives near Mt Ashland where he enjoys the beautiful skies of Southern Oregon from his backyard with his wife Shelley. This is Panos' first book on Astronomy.