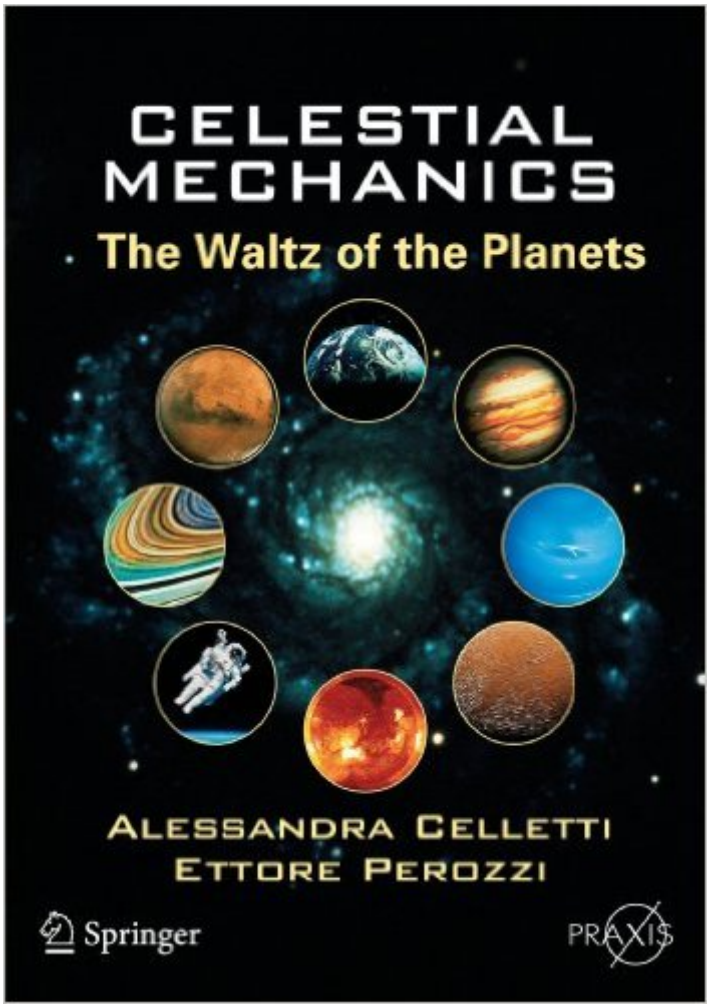
Celestial Mechanics: The Waltz Of The Planets (Springer Praxis Books)



Synopsis

The aim of this book is to demonstrate to a wider audience, as well as to a more skilled audience, the many fascinating aspects of modern celestial mechanics. It sets out to do this without the use of mathematics. After giving the reader the technical tools needed for a basic understanding of the underlying physical phenomena (using only elementary mathematics), facts and figures are provided on historical events, modern discoveries and future applications. Contents are divided into major topics where the three "souls" of modern celestial mechanics (dynamical systems, Solar System and stellar systems, spaceflight dynamics) play a major role.

Book Information

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Customer Reviews

Celestial mechanics studies the motion of bodies (stars, planets, satellites, etc.) under gravity. This book provides a quick overview of the subject, focusing especially on recent developments. The book presumes some knowledge of astronomy, but it’s suitable for any amateur astronomer. (It contains virtually no math.) My primary objection to this book is that it doesn’t explain many of the phenomena that it mentions. The book includes both a glossary that defines jargon and a guide to further information.Contents:Ch. 1: history of the subject; terminology regarding orbitsCh. 2: chaotic orbits and the multi-body problemCh. 3: orbital resonances: their role in the motions of moons and asteroids, and their exploitation by interplanetary probesCh. 4: spin-orbit resonances: tidal forces; synchronous resonance; geosynchronous satellites; obliquity; precession and its exploitation in archaeoastronomyCh. 5: stability of the solar system; paths of comets, meteorites, and asteroidsCh.

6: danger of asteroids colliding with the EarthCh. 7: motions of the moon; eclipses; the moon’s role in the creation of life; novel trajectories to the moonCh. 8: spacecraft flight: "halo" orbits; space debris around Earth; interplanetary trajectories (Hohmann transfer orbits, gravity assists)Ch. 9: planetary rings: their structure; the Roche limit; shepherd satellitesCh. 10: newly discovered objects in the solar system (Centaurs, etc.)Ch. 11: planets around other stars and the search for them (nulling interferometry)

I had always been curious about how and why things worked in our solar system. This book did a good job of answering my questions. As stated in the product description, only "elementary mathematics" are employed, but the instances of math usage are for illustrative purposes only, and are NOT essential for understanding the material presented. In fact - in my opinion - getting value from this book requires no practical application of mathematics on the part of the reader at all. However, I did find the text to be quite technical (as expected), and a basic understanding of astronomical terms and concepts is necessary in order to grasp the material. (Example glossary term: "Resonance: A commensurability among the periods of motion of two or more celestial bodies. The most common resonances are the mean motion resonances, which involve the revolution periods of different celestial bodies, and the spin-orbit resonances between the revolution and the rotation periods of the same celestial body.") I give it five stars for telling me what I wanted to know. This is not only a good beginner’s book for someone who is interested in a further study of celestial mechanics, but it would also provide useful information for a beginning astronomer as well.

This book on celestial mechanics is very thorough and a good value.Though written by Italian astronomy colleagues it is in goodto excellent English. It has little mathematics except geometry and that was a disappointment to me. Good coverage of chaos theory as it applies to celestial mechanics. Primarily dealswith the Solar System.

Hidden Universe (Springer Praxis Books) Jokes For Kids - Joke Books : Funny Books : Kids Books : Books for kids age 9 12 : Best Jokes 2016 (kids books, jokes for kids, books for kids 9-12, ... funny jokes, funny jokes for kids) (Volume 1) 5 BOOKS ON HINDUISM AND BUDDHISM. THE ESSENCE OF BUDDHISM, THE LIGHT OF ASIA, HINDU LITERATURE, THE SONG CELESTIAL OR BHAGAVAD-GITA, INDIAN POETRY (Timeless Wisdom Collection Book 4750) Celestial Navigation in a Nutshell (Seafarer Books) Praxis II: Elementary Education Content Knowledge CliffsNotes Praxis II English Subject Area Assessments (0041, 0043, 0044/5044, 0048, 0049, 5142), Second Edition Transnationalism Reversed: Women Organizing against Gendered Violence in Bangladesh (SUNY Series, Praxis: Theory in Action) Freedom from Poverty: NGOs and Human Rights Praxis (Pennsylvania Studies in Human Rights) Let’s Explore Mars (Solar System): Planets Book for Kids (Children’s Astronomy & Space Books) The Baltimore Waltz and Other Plays Waltz in A minor: Posthumous for the Piano, Sheet (Alfred Masterwork Edition) Waltz with Bashir: A Lebanon War Story