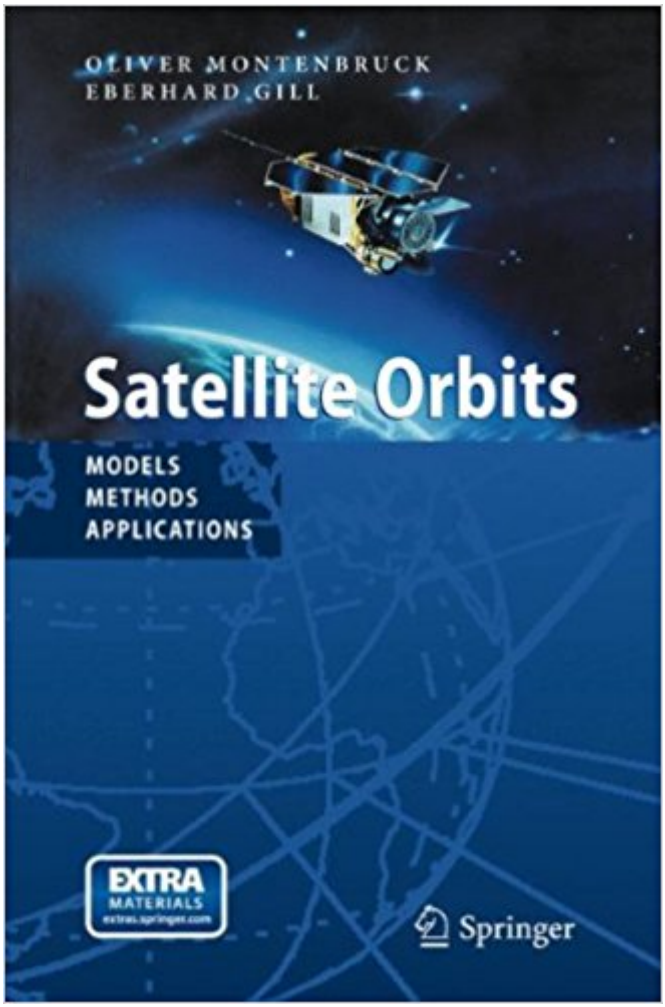
Satellite Orbits: Models, Methods And Applications



Synopsis

This modern presentation guides readers through the theory and practice of satellite orbit prediction and determination. Starting from the basic principles of orbital mechanics, it covers elaborate force models as well as precise methods of satellite tracking. The result is a powerful and unique spaceflight dynamics library, which allows users to easily create software extensions. An extensive collection of frequently updated Internet resources is provided through WWW hyperlinks.

Book Information

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Customer Reviews

From the reviews: "Not many books on the topic of satellite orbits over the past decades have been informative, comprehensive and practical. I am happy to say that this publication does fall into that category.Ã Â [...] This book should certainly be in the library of students and scientists working in the fields of navigation, geodesy, and spaceflight technology, as well as satellite engineers and operators focusing on spaceflight dynamics." (The Observatory, 2001) "Satellite Orbits: Models, Methods, and Application would be a valuable addition to the library of any engineer or scientist interested in the practical aspects of orbit prediction and determination. [...] " (Applied Mechanics Reviews, 2002)

This is a modern textbook that guides the reader through the theory and practice of satellite orbit prediction and determination. Starting from basic principles of orbital mechanics, it covers elaborate force models as well as precise methods of satellite tracking. Emphasis is on numerical treatment

and a multitude of algorithms adopted in modern satellite trajectory computation are described in detail. These programs are built around a powerful spaceflight dynamics library well suited to the development of individual applications. An extensive collection of Internet resources is provided through WWW hyperlinks to detailed and frequently updated online information on spaceflight dynamics. The book addresses students and scientists working in the field of navigation, geodesy and spaceflight technology, as well as satellite engineers and operators focusing on spaceflight dynamics.

2005 book. Information is readable. My biggest complaint is that the supposedly downloadable software references a password on the copyright page, and this does not exist. (extras.springer.com)So, you don’t get any software with this book which in my book makes it substantially less useful

I am just a programmer. I use some of the older, classic literature to write algorithms to track low-earth satellites. I’m not a math major. This book is an excellent addition because it helps me to understand how to connect orbital concepts with the math. It is short and to the point. The book’s construction quality is excellent!

Very thorough. Exactly what I needed. Great complement to "Statistical Orbit Determination" (Schutz, Tapley & Born), for those interested.Book came quickly and the product was exactly as advertised.

I purchased this book shortly after it was released in the first printing, and I agree that overall it’s the best reference available. The treatment is thorough, compact, lucid and filled with beautiful illustrations. Topics covered include time reference systems, orbit determination, Kalman filtering, and other more advanced subjects not usually treated in other similar books. I have used it extensively over the years, and decided I’d like the "4th corrected printing, 2012" which is the product currently being advertised. The new book I received had numerous problems with figures (no ink), and while offered to replace it and work with me to get a satisfactory replacement, I decided against it because it appears over the years that Springer has downgraded the print quality of their books overall. For example, the binding of the newer printings is not as good; the book no longer lies flat on the table when opened (like my original printing) and appears cheap. So I opted to keep my first printing (with some typos) and opt out of a ’corrected’ replacement. If having a quality

printed book is important to you, I'd consider getting a used copy of the 1st printing. Either that or wait until it comes out as an e-book or (hopefully) Springer retraces their steps and gives us a printed book comparable in quality to what they were releasing over a decade ago.

The book contents are great. However, the quality of the book I received is not, specifically the printing. Many of the figures are nearly unreadable due to blurriness and / or being very faint. The book is listed as a CDR edition but does not come with the CD-ROM, you must download the contents (which is fine, but should explicitly state this). The cover of the book is slightly different from the supplied picture and from the copy I have seen in my uni library - I suspect it is a fake.If you don't mind a dodgy copy go for it, otherwise, If I was to buy this book again, I'd go elsewhere.

The book is outstanding. BUT !!!On the front page there is a note "Extra materials available on "extras.springer.com"When I connect to this site I am told to introduce the ISBN number of the book, which I did.Next I am told to introduce "the password that is on the copyright page of the book"But THERE IS NO PASSWORD THERE so that I can't get the extra material.Can someone help me with that problem or is the editor at fault?Oscar BEAUFAYSProfessor emeritusEcole Polytechnique Brussels, Belgiumbeaufays@ieee.org

Got this book for Christmas. Not a beginner's text, but an excellent intermediate-level introduction for those who want to tackle practical application of astrodynamics without necessarily getting into long derivations. If you are familiar with Montenbruck's and Jean Meeus' astronomy books, you will right at home here. The authors assume you have some previous understanding of mechanics, and that you know what you want to do with it. Enough detail and derivation is given to understand what is being presented, and no more.A couple of subjects which are near and dear to me are covered: 1) Relativity, that is, the small perturbation to a satellite's orbit caused by the relativistic effect of Earth's gravity. This is a subject ignored by some notable authors in this field, for instance Vallado. 2) Numerical integration is covered in some detail: single-step methods, multi-step methods, extrapolation methods. This could be the subject of a whole book, and is usually treated very skimpily. Here you will find enough detail to program several different methods.This text has one of the best and simplest explanations of the expansion of the geopotential by spherical harmonics which I have seen (that is, the mathematical model of the slightly non-spherical gravitational field of the Earth).Much of the book is easily applicable to celestial mechanics, which is what I intend to do with it.

I’ve come to rely so much on how this book presents material that I can’t imagine trying to put together a decent spacecraft simulation without it. This is not one-stop-shopping for every possible model, but presents mid-fidelity models in a very useful way with notes about their assumptions and accuracy. It also gives great resources for further reading or specific models and is very easy and direct to read.More reference books should be written this way.

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