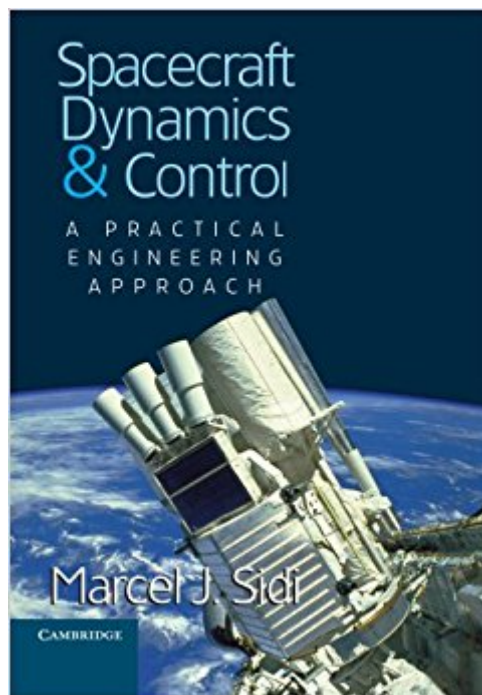




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Spacecraft Dynamics And Control: A Practical Engineering Approach (Cambridge Aerospace Series)



Synopsis

Used increasingly in telecommunications, scientific research, surveillance, and meteorology, satellites rely heavily on complex onboard control systems. This book explains the basic theory of spacecraft dynamics and control and the practical aspects of controlling a satellite. The emphasis is on analyzing and solving real-world engineering problems. Among the topics covered are orbital dynamics, attitude dynamics, gravity gradient stabilization, single and dual spin stabilization, attitude maneuvers, attitude stabilization, and structural dynamics and liquid sloshing.

Book Information

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Customer Reviews

"This reviewer strongly recommends this back-to-basics book on spacecraft dynamics and control to the engineering libraries and to those entering aerospace engineering schools and aerospace engineering practice. Again, the author successfully achieved his stated goal of bringing practical engineering reality into early aerospace education and it makes his book, *Spacecraft Dynamics and Control* well worth reading and keeping as a unique reference." *Applied Mechanics Reviews* "One especially useful feature of the book is the extensive use of specific examples illustrating the various topics...I am confident that anyone working in the field of spacecraft dynamics will find plenty of useful material in this book. The book will also be useful as a textbook for a one- or two-semester course at the senior or first-year graduate student level." *Journal of Spacecraft and Rockets*

Satellites are used increasingly in telecommunications, scientific research, surveillance, and meteorology, and these satellites rely heavily on the effectiveness of complex onboard control systems. This book explains the basic theory of spacecraft dynamics and control and the practical aspects of controlling a satellite. The emphasis throughout is on analyzing and solving real-world engineering problems. For example, the author discusses orbital and rotational dynamics of spacecraft under a variety of environmental conditions, along with the realistic constraints imposed by available hardware.

This is a preliminary review as I am still going through the book. I had a few books I looked at from the library, but I picked this one since it seemed to move well between the theory and what situations are typical. The deficiency though, is that there are only a few worked examples mixed in with the chapter.

This has been very helpful as an on-the-desk reference manual on a broad range of spacecraft dynamics, and orbital dynamics. It's gotten a great deal of use at my desk.

Surprised Sidi's great text has no 5 star reviews yet. I discovered this book while I was working on a smallsat ADCS--my first assignment as a controls engineer where I carried any real responsibility. I had done my undergrad in physics and was still learning how to think like an engineer. Thanks to Sidi's practical and thorough discussion of attitude dynamics and control I was able to successfully complete this first assignment. Indeed, so much so that at the end of it my boss, who knew my background, met with me and asked "how the heck do you know so much about spacecraft dynamics?!". When I became a grad student I was the project manager for a smallsat attempt by Purdue, and also did specific research on ADCS which became my master's thesis and has produced peer-reviewed publications. Throughout all of that I kept a copy of Sidi on my desk and consulted it frequently. Everyone can learn something from this book, and I am sad I no longer have a copy--I will have to remedy that soon .

The technical data is invaluable and the author condensed a vast technical material nicely in several chapters. If you are an aerospace scientist and doing daily engineering analysis this book is tailored to help you refresh your spacecraft dynamic and control methodology knowledge. Fairly easy to read and apply.

Is a base book for understand the basics of attitude dynamics and how to control that.

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