

BOOK REVIEW: GNSS DATA PROCESSING

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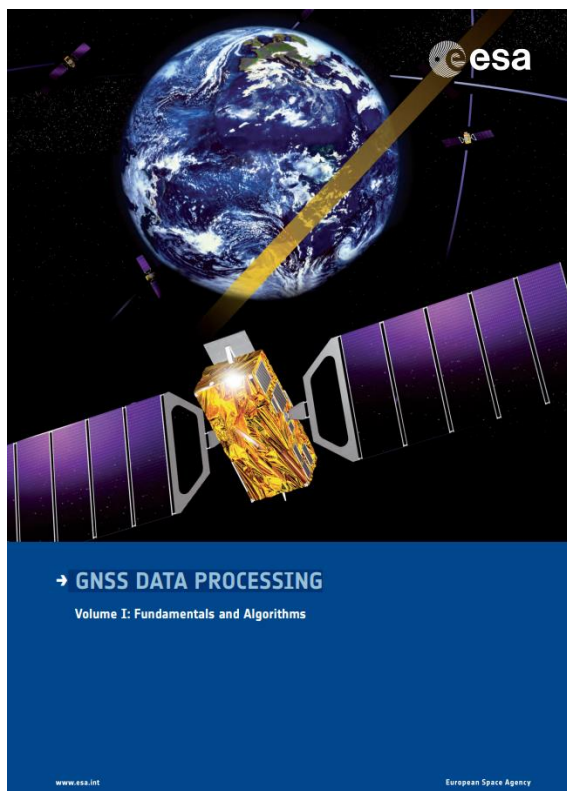
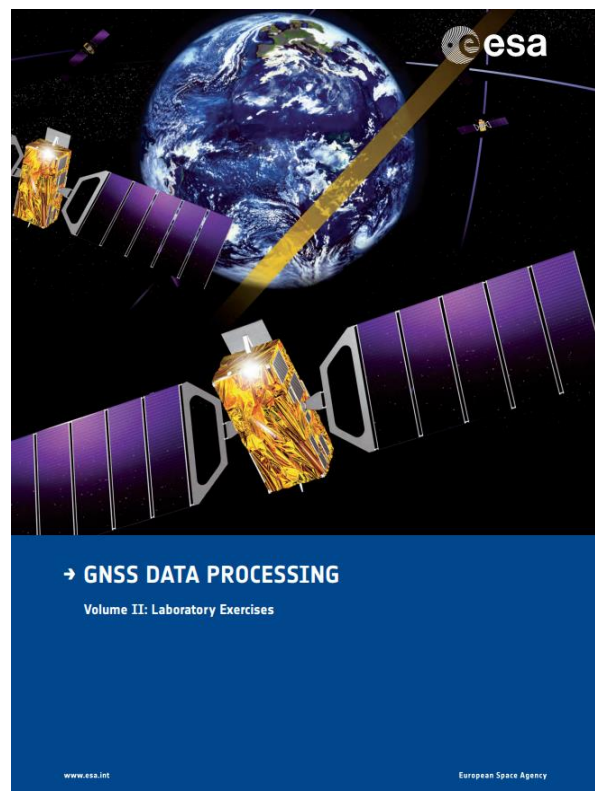
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ABSTRACT

The book of GNSS DATA PROCESSING by J. Sanz Subirana, J.M. Juan Zornoza, and M. Hernández-Pajares, I finished reading this book and used it for understanding and referencing to my learning. I am fascinated and I like it. Its content is very useful for students, teachers, and people who interest in these matters. This book consists of the fundamentals, GNSS application by using self-learning materials, experimental software for addressing the GNSS-related problems emerging from different students capable of fast capacity, and experience development on real problem solving. Hopefully, you will love this book.

Keywords: GNSS



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The satellite communications industry has become an important part of today's communications infrastructure. There is constantly evolving and will bring more connectivity to the ways in which we communicate. Satellites have played a fundamental role in this connectivity where the many types of satellites provide data acquisition, research, telecommunications, safety and weather forecasts, navigation, business insights, environmental monitoring, and defense. In the last five years, the space industry has had a rapid increase in satellite launches. In many ways today's satellites are digital processors in the sky and they perform their communications capabilities.

Global Navigation Satellite System: GNSS is a satellite navigation system. Currently, GNSS systems have been brought into use in various fields for example navigation system, positioning, intelligence transportation systems, surveying, mapping, meteorology, forestry applications, precise agriculture and farming, earthquake and tsunami monitoring, emergency message service, structural health monitoring, or engineering design, etc. This technology is becoming very popular in many fields and research. Currently, many satellite navigation systems have been developed, such as GPS (USA), GLONASS (Russia), Galileo (Europe), BeiDou (China), QZSS (Japan), SBAS, etc.

As a researcher, I am studying in the field of GNSS signals application for earthquake surveying. I have studied from many different Information sources. I found a very interesting and informative book related to our research in the book of GNSS DATA PROCESSING. The details are as below.

Subirana et al. (2013) created this book of The GNSS DATA PROCESSING. This book has been updated and separated into two volumes which aimed at providing the basic information needed to begin studying or practicing on Global Navigation Satellite System (GNSS). This book contains materials for self-learning and software tools for practicing. The design and contents are focused on the concepts and techniques related to GNSS navigation and applications. Its purpose is to include all the elements necessary to understand how the system works and how to work with it.

Theory is the first volume that provides a summary of the fundamentals and algorithms of GNSS, including GPS, Glonass, Galileo, and Beidou. The laboratory experimental is the second volume with a wide range of selected practical examples going further into the theoretical concepts and their practical implementations. These exercises were developed with a special software package provided on CD-ROM with laboratory sheets for the practicing sessions. There are 15 practical sessions in a set of practical learning.

The GNSS course specified to all teachers, students, researchers and those who are interested wish to undertake a deeper study of satellite navigation, targeting the GNSS data processing, analysis issues, and the applications. The book of GNSS DATA PROCESSING, Fundamentals and Algorithms (Volume I) is divided into six chapters as follows:

Chapter 1 Introduction,

Chapter 2 GNSS Architecture,

Chapter 3 GNSS Time Reference, Coordinate Frames and Orbits,

Chapter 4 GNSS Measurements and Data Preprocessing,

Chapter 5 Measurement Modelling, and

Chapter 6 Solving Navigation Equations.

GNSS DATA PROCESSING: Laboratory Exercises (Volume II), this volume offers for the practicing part with the self-learning materials (GNSS-LABoratory: gLAB tool suite). These laboratories are the following advanced part of an experimental understanding of the Volume I: Fundamentals and Algorithms (theory). The contents of volume two consist of

Laboratory 1 The gLAB Tool Suite,
Laboratory 2 Laboratory Environment and Data Files,
Laboratory 3 Satellite Orbits and Clocks,
Laboratory 4 Measurement Analysis,
Laboratory 5 Measurement Modelling and Positioning,
Laboratory 6 Analysis of GPS SVN49 Anomaly, and
Laboratory 7 A GNSS Elemental Routines and gLAB Libraries.

After I finished learning from two books, I was inspired and supported my knowledge with theory and practice. I strongly believe that I can get benefits from the guideline and examples from GNSS DATA PROCESSING Volume I: Fundamentals and Algorithms and Volume II: Laboratory Exercises for applying them to solve the problems in the research. In addition, I believe that these are trust references in significant research resources.

REFERENCE

Subirana, S. J., Zornoza, J.M. J., & Hernández-Pajares, M. (2013). The GNSS DATA PROCESSING. ESA Communications Publisher.