

Kaula, William M.

Theory of satellite geodesy. Applications of satellites to geodesy. Repr. (English)

Zbl 0973.86001

Mineola, NY: Dover Publications. 124 p. (2000).

Despite the many changes since 1966 in satellite geodesy in tracing and computing capabilities the second publishing of this book is helpful in gaining insight into geometry and dynamics, and thus useful as a textbook for the students of astronomical, geodetical and geophysical specialization.

The first purpose of this text is to demonstrate the applications and development of Newtonian gravitation and Euclidean geometry for the Earth. The other purpose is to collect and explain a number of mathematical methods for utilizing artificial satellites in geodesy.

Chapter 1 considers the Earth's gravity field as represented by a normal potential of an ellipsoid revolution plus small irregular variations expressed by a sum of spherical harmonics. The purpose of Chapter 2 is to describe the geometry of an idealized situation: a vacuum with an earth rotating uniformly with respect to fixed inertial coordinates. The purpose of Chapter 3 has been to develop the theory of close-satellite as part of the geodetic environment or to describe a particular phenomenon connected with the Earth's gravity field. In Chapter 4 the author discusses the geometry pertaining to observations of the satellite; he develops differential relationships for all quantities affecting observations and considers variations in the reference frame. Chapters 5 and 6 present statistical implications and data analysis.

Reviewer: [S.G.Valeev \(Ul'yanovsk\)](#)

MSC:

[86A30](#) Geodesy, mapping problems

[86-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to geophysics

Cited in **1** Review
Cited in **94** Documents

Keywords:

[satellite geodesy](#); [Earth's gravity field](#)