

Relativity in Celestial Mechanics and Astrometry: High Precision Dynamical Theories and Observational Verifications, , ISSN 0074-1809; Springer Netherlands, 1986; International Astronomical Union. Symposium; 1986; 9789027721891; 426 pages

High Precision Dynamical Theories and Observational Verifications. Editors: Kovalevsky, Jean, Brumberg, V.A. (Eds.) Buy this book. The driving idea, in organizing this Symposium on "Relativity in Celestial Mechanics and Astrometry" was that, in recent years, the accuracy of several Astrometric techniques has so much increased that relativistic effects are no more marginally mentioned in academic presentations but have become an intrinsic part of the interpretation of all the positional data. Techniques such as V. L. B. I. , space probes, lunar lasers, etc . . . have greatly contributed to reduce the accuracy level to an angular equivalent of a few milliarc-seconds. In the first Chapter the subject of 'Relativity in Astrometry, Celestial Mechanics and Geodesy' is introduced in a non-technical manner. It contains an overview of the rapid increase in measuring accuracy in these disciplines and demonstrates how various 'relativistic effects' play a role. The second Chapter presents a confrontation of Newtonian with a relativistic theory of gravity and thereby serves as a short introduction to Einstein's theory of gravity. Various highly precise geodetic techniques such as superconducting gravimetry, synchronization and comparison of clocks or radio interferometry using long baselines (VLBI) are treated in Chapter five. Celestial mechanics is the branch of astronomy that deals with the motions of objects in outer space. Historically, celestial mechanics applies principles of physics (classical mechanics) to astronomical objects, such as stars and planets, to produce ephemeris data. Modern analytic celestial mechanics started with Isaac Newton's Principia of 1687. The name "celestial mechanics" is more recent than that. Newton wrote that the field should be called "rational mechanics." The term "dynamics" came in a About this book. The book "Relativity in Astrometry, Celestial Mechanics and Geodesy" represents a significant contribution to modern relativistic celestial mechanics and astrometry. In these branches of astronomy the theory of general relativity is used nowadays as an efficient practical framework for constructing accurate dynamical theories of motion of celestial bodies and discussing high-precision observations. The author develops the useful tools for this purpose and introduces the reader into the modern state of the art in these domains. More specifically, the distinctive feature of