



## Modern Astrodynamics: Second Edition

By William E Wiesel

Createspace, United States, 2010. Paperback. Book Condition: New. 228 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.Beginning with Hamiltonian dynamics, Modern Astrodynamics blends the modern methods of dynamical systems theory with the perturbation theory methods of the last century. With an emphasis on earth satellite motion, the derivation of the geopotential expansion is covered, and the motion of an object under the influence of the Earth's equatorial oblateness is derived to the first order. The structure of the phase space of Hamiltonian systems is explored both with modern numerical techniques (the surface of section) periodic orbit theory, and nonlinear resonance methods. The text concludes with applications of these modern methods to the problem of the relative motion of satellites in orbit about the earth, and the application of KAM tori to earth satellite motion. The text is suitable for a semester course at the introductory graduate level. Topics covered include: (1) Modern Numerical Methods, (2) Transformation Theory, (3) Variation of Elements, (4) Perturbing Forces, (5) General Perturbations, (6) Nonlinear Resonance, (7) Relative Satellite Motion, and (8) KAM Tori.



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