1. Record Nr. UNINA9910254631603321

Autore	Yu Yang
Titolo	Orbital Dynamics in the Gravitational Field of Small Bodies / / by Yang Yu
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2016
ISBN	3-662-52693-X
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (XVIII, 123 p. 49 illus., 17 illus. in color.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	629.4113
Soggetti	Astrophysics Aerospace engineering Astronautics Dynamics Ergodic theory Computer simulation Statistical physics Mechanics Astrophysics and Astroparticles Aerospace Technology and Astronautics Dynamical Systems and Ergodic Theory Simulation and Modeling Applications of Nonlinear Dynamics and Chaos Theory Classical Mechanics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Doctoral Thesis accepted by Tsinghua University, Beijing, China."
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- SSSB Model and equations of motion -- Stability of equilibrium points and the local behavior of orbits -- Topology and stability of large-scale periodic orbits -- Resonant orbit near the equatorial plane -- Free motion of a particle close to the surface of SSSBs -- Conclusions and future directions.
Sommario/riassunto	This prizewinning PhD thesis presents a general discussion of the orbital motion close to solar system small bodies (SSSBs), which induce

non-central asymmetric gravitational fields in their neighborhoods. It introduces the methods of qualitative theory in nonlinear dynamics to the study of local/global behaviors around SSSBs. Detailed mechanical models are employed throughout this dissertation, and specific numeric techniques are developed to compensate for the difficulties of directly analyzing. Applying this method, several target systems, like asteroid 216 Kleopatra, are explored in great detail, and the results prove to be both revealing and pervasive for a large group of SSSBs. .