

1. Record Nr.	UNINA9910257394003321
Autore	Henon Michel <1931->
Titolo	Generating Families in the Restricted Three-Body Problem // by Michel Henon
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 1997
ISBN	3-540-69650-4
Edizione	[1st ed. 1997.]
Descrizione fisica	1 online resource (XI, 280 p.)
Collana	Lecture Notes in Physics Monographs ; ; 52
Disciplina	521
Soggetti	Astronomy System theory Mathematics - Data processing Solar system Mathematical physics Astronomy, Observations and Techniques Complex Systems Computational Mathematics and Numerical Analysis Space Physics Theoretical, Mathematical and Computational Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Definitions and Properties -- Generating Orbits of the First Species -- Generating Orbits of the Second Species -- Generating Orbits of the Third Species -- Bifurcation Orbits -- Junctions: Symmetry -- Junctions: Broucke's Principle -- Fragments -- Generating Families.
Sommario/riassunto	The classical restricted problem of three bodies is of fundamental importance for its applications to astronomy and space navigation, and also as a simple model of a non-integrable Hamiltonian dynamical system. A central role is played by periodic orbits, of which a large number have been computed numerically. In this book an attempt is made to explain and organize this material through a systematic study of generating families, which are the limits of families of periodic orbits when the mass ratio of the two main bodies becomes vanishingly small.

The most critical part is the study of bifurcations, where several families come together and it is necessary to determine how individual branches are joined. Many different cases must be distinguished and studied separately. Detailed recipes are given. Their use is illustrated by determining a number of generating families, associated with natural families of the restricted problem, and comparing them with numerical computations in the Earth-Moon and Sun-Jupiter case.

---