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Titolo	The Restricted Three-Body Problem and Holomorphic Curves / / by Urs Frauenfelder, Otto van Koert
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Descrizione fisica	1 online resource (381 pages)
Collana	Pathways in Mathematics, , 2367-3451
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Soggetti	Geometry, Differential Functions of complex variables Differential Geometry Several Complex Variables and Analytic Spaces
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Nota di contenuto	Introduction -- Symplectic geometry and Hamiltonian mechanics -- Symmetries -- Regularization of two body collisions -- The restricted three body problem -- Contact geometry and the restricted three body problem -- Periodic orbits in Hamiltonian systems -- Periodic orbits in the restricted three body problem -- Global surfaces of section -- The Maslov Index -- Spectral flow -- Convexity -- Finite energy planes -- Siefring's intersection theory for fast finite energy planes -- The moduli space of fast finite energy planes -- Compactness -- Construction of global surfaces of section -- Numerics and dynamics via global surfaces of section.
Sommario/riassunto	The book serves as an introduction to holomorphic curves in symplectic manifolds, focusing on the case of four-dimensional symplectizations and symplectic cobordisms, and their applications to celestial mechanics. The authors study the restricted three-body problem using recent techniques coming from the theory of pseudo-holomorphic curves. The book starts with an introduction to relevant topics in symplectic topology and Hamiltonian dynamics before introducing some well-known systems from celestial mechanics, such as the Kepler problem and the restricted three-body problem. After an overview of different regularizations of these systems, the book continues with a

discussion of periodic orbits and global surfaces of section for these and more general systems. The second half of the book is primarily dedicated to developing the theory of holomorphic curves - specifically the theory of fast finite energy planes - to elucidate the proofs of the existence results for global surfaces of section stated earlier. The book closes with a chapter summarizing the results of some numerical experiments related to finding periodic orbits and global surfaces of sections in the restricted three-body problem.
