Record Nr. UNINA9910921009603321 Autore Genta Giancarlo Titolo Journey to The Planets: The Technology to Build a Spacefaring Civilization / / by Giancarlo Genta Cham:,: Springer Nature Switzerland:,: Imprint: Springer,, 2025 Pubbl/distr/stampa **ISBN** 9783031576966 3031576969 Edizione [1st ed. 2025.] Descrizione fisica 1 online resource (586 pages) Collana Space Technology Library, , 2542-8896;; 43 Disciplina 629.4 Soggetti Aerospace engineering **Astronautics** Outer space - Exploration Planetary science Aerospace Technology and Astronautics Space Exploration and Astronautics Planetary Science Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto 1. Introduction: building a spacefaring civilization -- 2. The solar system -- 3. Propulsion for interplanetary journeys -- 4. Point-topoint motion in field-free space -- 5. Leaving Earth -- 6. Interplanetary travel: impulsive approximation -- 7. Interplanetary travel: continuous thrust -- 8. Orbit to orbit travel: continuous thrust -- 9. Trajectories in the Earth-Moon system -- 10. Travelling between extrasolar planets. This book gives an account, as little biased as possible, on human Sommario/riassunto space missions beyond low Earth orbit in general, and specifically to the planets of the solar system. The importance of advanced propulsion is stressed and the mathematical methods needed to design missions based on them are described. The included computer code allows the user to assess the feasibility of the various missions using different propulsion systems and how advancements in propulsion can allow humankind to become a true spacefaring civilization. As opposite to the majority of books dealing with mission design, where the subject is

usually dealt with in a highly mathematical way, here an attempt is

made to avoid as much as possible the mathematical complexities and to focus on the practical aspects of the design. However, the equations needed to make numerical analysis and simulations of the missions are described and discussed. An original computer code is included in the book, and an appendix helps the reader to understand how to use it. The code is different from existing ones since its main aim is to be user friendly and to allow the user to make a preliminary design of interplanetary missions aimed to planets and their satellites, comets or asteroids.