

1. Record Nr.	UNINA9910555100103321
Titolo	The solar system 1 : telluric and giant planets, interplanetary medium and exoplanets / / edited by Therese Encrenaz, James Lequeux
Pubbl/distr/stampa	Hoboken, New Jersey : , : John Wiley & Sons, Incorporated, , [2021] ©2021
ISBN	1-119-88165-X 1-119-88166-8 1-119-88164-1
Descrizione fisica	1 online resource (352 pages)
Disciplina	523.2
Soggetti	Electronic books. Solar system Age
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Cover -- Half-Title Page -- Title Page -- Copyright Page -- Contents -- Preface -- 1. General Presentation of the Solar System -- 1.1. Introduction -- 1.2. Mechanics and dynamics of the Solar System1 -- 1.2.1. Newton's law of gravitation -- 1.2.2. Kepler's laws r -- 1.2.3. Mean motion resonances -- 1.2.4. The N-body problem -- 1.2.5. The role of collisions -- 1.2.6. Migrations in the Solar System -- 1.2.7. The role of gravity in a solid body -- 1.2.8. Special configurations of the Sun-Earth-Moon system -- 1.3. Physics of the Solar System -- 1.3.1. Equilibrium temperature of an object in the Solar System -- 1.3.2. Planets -- 1.3.3. Satellites -- 1.3.4. Small bodies of the Solar System -- 1.3.5. The interplanetary medium2 -- 1.4. References -- 2 Solar and Planetary Systems -- 2.1. The Sun in the Galaxy -- 2.2. Planetary systems in the Galaxy -- 2.3. Interstellar matter ¹ -- 2.3.1. History -- 2.3.2. Chemical composition -- 2.3.3. Physical properties -- 2.4. The formation of stars with masses close to that of the Sun -- 2.5. Circumstellar disks -- 2.6. Formation of planetesimals and planetoids -- 2.7. The environment of the Solar System at its birth -- 2.8. Detection and properties of exoplanets and their systems -- 2.8.1. First attempts -- 2.8.2. The unexpected discovery of planets around a

pulsar -- 2.8.3. Exoplanet detection methods -- 2.8.4. Some statistical results -- 2.8.5. The diversity of exoplanets -- 2.8.6. Exoplanet atmospheres -- 2.8.7. Habitable planets -- 2.8.8. Some extrasolar planetary systems -- 2.9. References -- 3 The Interaction of Solar System Bodies with the Interplanetary Medium¹ -- 3.1. Interplanetary plasma: origin and properties of the solar wind -- 3.1.1. Coronal expansion -- 3.1.2. The structure of the heliosphere in the ecliptic plane -- 3.1.3. The three-dimensional structure of the heliosphere. 3.1.4. Transient structures of the solar wind -- 3.1.5. The boundaries of the heliosphere -- 3.2. Planetary envelopes -- 3.2.1. Upper planetary atmospheres -- 3.2.2. Planetary magnetic fields -- 3.3. The solar wind's interaction with objects of the Solar System -- 3.3.1. The different types of interaction -- 3.3.2. The case of non-magnetized gaseous envelopes -- 3.3.3. The case of magnetized planets -- 3.3.4. Planetary auroral processes -- 3.4. Acknowledgements -- 3.5. References -- 4 Telluric Planets -- 4.1. The exploration of the telluric planets -- 4.1.1. From antiquity to the space age -- 4.1.2. The beginning of the space age -- 4.1.3. The return to Mars -- 4.1.4. The return to Venus -- 4.1.5. Observations from the ground -- 4.1.6. The exploration of planet Earth -- 4.1.7. Global Climatic Models -- 4.1.8. The electromagnetic spectrum of telluric planets -- 4.2. Objects without an atmosphere: Mercury, the Moon¹ -- 4.2.1. Orbital parameters and macroscopic characteristics -- 4.2.2. Exospheres -- 4.2.3. Internal structure -- 4.2.4. The surfaces of Mercury and the Moon -- 4.2.5. The origin of Mercury and the Moon -- 4.2.6. Mercury's magnetosphere -- 4.3. Objects with an atmosphere (Venus, Earth, Mars) -- 4.3.1. The interior and the magnetic field² -- 4.3.2. The surface³ -- 4.3.3. The atmosphere -- 4.3.4. The satellites of Mars -- 4.4. References -- 5 Giant Planets -- 5.1. The exploration of giant planets -- 5.1.1. From Antiquity to the Space Age -- 5.1.2. Space exploration -- 5.1.3. Exploration from Earth and the terrestrial environment -- 5.1.4. The electromagnetic spectrum of giant planets -- 5.2. The atmosphere of giant planets -- 5.2.1. Atmospheric composition -- 5.2.2. Elemental and isotopic abundance ratios -- 5.2.3. Thermal structure -- 5.2.4. Atmospheric circulation and cloud structure -- 5.2.5. High atmosphere and photochemistry. 5.3. The internal structure of giant planets -- 5.3.1. Experimental data -- 5.3.2. The construction of internal energy models -- 5.3.3. The results -- 5.4. The magnetospheres of the giant planets -- 5.4.1. Jupiter's giant magnetosphere -- 5.4.2. Saturn's symmetrical magnetosphere -- 5.4.3. The asymmetric magnetospheres of Uranus and Neptune -- 5.5. References -- Appendix Web links -- Glossary -- List of Authors -- Index -- EULA.
