Master Physique fondamentale et applications
Planètes et étoiles - planets and stars

Dernière modification le 18/06/2024

Informations

Composante : Faculté des Sciences

Langue(s) d'enseignement

Anglais

Contenu

Stars: properties, evolution

The interstellar medium

This course will explore the key processes of star and planetary system formation, divided into two equally lengthy parts. The first part will focus on stellar formation, addressing the stability of clouds in equilibrium, the collapse of dense cores, the stage of proto-stars and their evolution, as well as the impact of young stars on their environment. The second part will delve into planetary formation, drawing on observations of the solar system and exoplanets to study the structure and evolution of protoplanetary disks, as well as the genesis of terrestrial and giant planets. The internal structures of giant and terrestrial planets will also be examined in detail. Concurrently, the formation of solar system satellites will be explored, with a particular focus on Jupiter's Galilean moons. Additionally, crucial questions regarding the habitability of these Galilean moons will be addressed in light of the ESA's JUICE and NASA's Europa-Clipper missions, scheduled to explore the Jovian system as early as the 2030s.

Bibliographie, lectures recommandées

Partie exoplanètes: "Planetary Sciences" de Imke de Pater et Jack J. Lissauer, un manuel complet sur la formation, la composition et l'évolution des planètes et petits corps du système solaire. "Exoplanets" édité par Sara Seager, un ouvrage de synthèse sur les exoplanètes et les méthodes de détection et caractérisation

Prérequis recommandés

Physique des plasmas

Physique atomique

Partie Science planétaire: Solides connaissances en sciences de la Terre, physique, chimie et mathématiques acquises au niveau Licence.
Culture scientifique multidisciplinaire incluant l'environnement, les sciences de la Terre et l'astrophysique

VOLUME HORAIRE

- Volume total: 40 heures
- Cours magistraux: 17 heures
- Travaux dirigés: 17 heures
- Travaux pratiques: 6 heures

Codes Apogée

- SPFBU12C [ELP]

Pour plus d'informations

Aller sur le site de l'offre de formation...