

A giant collision scenario to form Phobos and Deimos

A giant collision is the accepted scenario for the origin of our Moon. This scenario is based on Lunar samples and on numerous theoretical works and numerical simulations, still ongoing today. The giant impact scenario to explain the origin of the Martian moons, Phobos and Deimos, has been first proposed in 1994, but really studied only since a couple of years. Dynamical aspects of the accretion process in a Martian proto-moon disk have shown it is possible to form only two small moons from a debris disk basted into orbit after a giant collision. More recent works have studied the physical properties of the debris cloud and how it can evolve toward a flat accretion disk in the equatorial plane of the planet as well as the chemical evolution of the material of this debris cloud.

In this seminar, these recent works will be presented and discussed in detail especially with regard to the Martian Moon Exploration mission of the Japanese space agency (JAXA) which aims to bring back to Earth a sample of Phobos material in 2029.