

Examining accretion process of Phobos and Deimos in giant impact-induced disk

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Mars has two small moons, Phobos and Deimos. JAXA is planning a sample return mission from Martian satellite(s) (MMX mission: Martian Moons eXploration). The aim of this work is to understand the origin and evolution of Phobos and Deimos from theoretical aspects in advance of the mission with an expectation that our results will maximize the science return from the mission.

Recently, we have developed a physical model that Phobos and Deimos accreted from a debris formed by a giant impact (Rosenblatt et al. 2016, Nature Geo). However, due to lack of the resolution of the debris disk, the details of the disk composition and thermodynamical information are unclear. In this work, we present detailed analytical arguments and high-resolution SPH simulations to help better understanding of the accretional processes of Phobos and Deimos.

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