

Hydrodynamic escape of vapor from proto-lunar disk

Hidenori Genda[1], Yutaka Abe[2]

[1] Dep. of Earth and Planetary Phys., Tokyo Univ., [2] Earth Planetary Phys., Univ. Tokyo

There is the giant impact hypothesis as the origin of the Moon. The impact-generated disk is expected to be very hot and partially vaporized. Therefore, it is possible that hydrodynamic escape occurs. Analytically, we calculate a criterion for the disk escape, using the equation for the hydrostatic equilibrium. Generally, escape occurs at the outer side of the disk, but in the case of high temperature disk, escape even occurs at near the center. Because the distribution of mass is changed by escape, it suggests that the disk's ratio of angular momentum to mass depends on initial temperature. It's ratio is very important, because it influences the final moon mass. We are to discuss the timescale of escape and the influence of escape.