

Angular Momentum Transport in the Protolunar Disk and the Origin of the Moon

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The most prevailing hypothesis of the origin of the Moon is the giant impact hypothesis. It claims that a Mars-sized protoplanet collided with the protoearth and the mantle material of the impactor is flung around, forming a circumterrestrial disk, and that the Moon is formed from this protolunar disk. However, little study had been done about the accretional process of the Moon. In this study, we investigate the angular momentum transport due to self-gravity and angular momentum transport due to collisions and movements of particles, by N-body simulations, and studied the timescale of the lunar accretional process. We also studied the dependence of the timescale on the particle number N , and found that the accretional process of the Moon is very rapid, independent of N .