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An N-Body Study of Late Lunar-Forming Impacts JUSTIN EILAND, Tarleton State University, BRETT HOKR, JUSTIN HIGHLAND, Texas A&M University, TRAVIS SALZILLO, BRYANT WYATT, Tarleton State University — Jupiter has 63 moons some believed to be captured asteroids and others to have been formed from accumulations of Jupiter's circumplanetary disk. Mars has two distinct moons which are thought to be captured asteroids. Earth has only one moon, but what makes our moon interesting and unique is its large relative size compared to Earth and its lack of iron. Because of this, it is believed that the Earth-Moon system was formed by a giant impact which stripped off a large portion of the Earth's outer material to create our Moon. Impact studies have produced Earth-disk systems with the protolunar disk being sufficiently massive and iron-depleted but have not created an Earth-Moon system. Models have also been produced that show how a moon can be formed from a disk of debris similar to that produced by these collision simulations. However, there has currently been no model that produced both the Earth and the Moon from a single simulation. In this study we use a simplified body to body, gravity centered force model coupled with General Purpose Graphics Processing Unit's (GPGPU) for computing power to accomplish what has previously eluded researchers.

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