

Spinup of strengthless bodies as a binary formation mechanism

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We present preliminary results from a series of simulations of the slow spinup of strengthless aggregates with the goal of understanding the origin of Near-Earth and small Main-Belt binary asteroids. Our model consists of a strengthless body made up of identical self-gravitating spheres. The spin of the body is slowly increased in a way meant to mimic thermal spin-up effects, up to the point of shape change and mass loss. We simulate a variety of initial body shapes with varying simulation resolution and spin-up parameters. Each simulation is analyzed by monitoring the change in spin rate and body shape. Ejected particles are tracked to see if they are lost from the system or go into orbit around the primary. The potential for binary formation within this scenario is analyzed, and the prospects for future research in this field are discussed.