

Abstract Submitted
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Numerical Simulations of Granular Asteroid Growth BENJAMIN
BEAUMONT, NC State University — It is believed that planetesimals and asteroids
are created by the accumulation of interstellar dust. However, the processes that
govern the collision, agglomeration, and fragmentation of clusters of grains are not
well understood. Prior research in the topic has established regimes for the results
of conservative collisions of particle clusters held together by contact forces, but
neglects gravity, a critical component once particles are no longer touching. We run
simulations of clusters of particles modeled as hard frictionless spheres that take into
account gravity and dissipation of energy. We obtain outcomes of collisions of two
clusters with variable masses, particle counts, velocities, and impact parameters. We
then compare our results to other models and simulations, and find that conservative
collisions can take place at higher energies than classically predicted.

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