

Numerical simulation on trajectories of crater ejecta from a small asteroid

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An artificial impact cratering experiment is planned in the Hayabusa-2 mission by a small carry-on impactor. Trajectory of ejecta from the crater shows complex behavior due to an asymmetric gravitational field of the small and irregular-shaped asteroid and solar radiation pressure. We examine the trajectories and fate of impact ejecta around the asteroid using numerical simulation. Gravitational field of the asteroid is estimated by a polyhedron method with a polygon shape model of the asteroid. Solar radiation pressure to small ejecta grains is modeled by a cannon-ball method. Size-frequency distributions and velocity-frequency distribution of ejecta particles are considered to estimate a time development of ejecta distributions around the asteroid.

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