P154-P005 **Room: Poster Session Hall** **Time: May 16**

Angular momentum transfer efficiency in the collision between rubble pile objects

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Recent observations suggest that many of small asteroids may be gravitational aggregates. Since collisions change the spin of these asteroids, their spin distribution would provide useful information about their origin and collisional evolution. However, attempts to model the collisional evolution of asteroids that include their spin evolution have several difficulties.

One is that how the spin of the asteroid responds to an impact event is not well understood. SPH simulation showed that the efficiency of angular momentum transfer in large asteroid collisions appears to be significantly smaller than observed in centimeter-scale laboratory impacts.

Using N-body method to simulate impact event between rubble pile objects, we have examined transfer of angular momentum to a target (or the largest remnant if the impact is disruptive) from the orbital angular momentum of an impactor. We performed a large number of simulations with various values of parameters, such as the mass ratio of colliding objects, impact parameter, impact speed, and the degree of energy dissipation at impact. Our simulations show low angular momentum transfer efficiency at disruptive collisions, and we found a clear relationship between the angular momentum transfer efficiency and the degree of disruption, and this relationship appears not to depend on the dissipation parameter. These low angular momentum transfer efficiency comes from the assymetric fracture distribution.

Applying our results to the evolution of spin distribution of asteroid, we found that it is difficult to spin up large asteroids by collision, while smaller asteroids can be spun up to the present average spin rate.

Also, we will discuss despining effect of the assymetric fracture distribution (angular momentum drain/splash).