

**COLLISIONS ON GRAVITATIONAL AGGREGATES: DEPENDENCE ON SIZE AND TEXTURE.**A. Campo Bagatin<sup>1</sup>, M. J. Davo<sup>1</sup>, D. C. Richardson<sup>2</sup><sup>1</sup>Depto. De Física, ISTS. Universidad de Alicante. P.O. Box 99. E-03080 Alicante (Spain).<sup>2</sup>Dept. of Astronomy, University of Maryland. College Park, MD (U.S.A.) 20242-2421.

**Abstract:** The internal structure of asteroids and comets is one of the unsolved problems of planetology. Despite of the available experimental results about the fragmentation of cohesive bodies and the theoretical and numerical studies extending these results, little is known about the response to collisions by objects that formed by the gravitational re-accumulation following shattering events.

We are developing a study –based on a numerical model of the N-body problem (PKDGRAV code)— about the effects of collisions on rocky gravitational aggregates (GA) between 100 m and 300 km in size. All GA are made up by the same number of particles (5000, in the default case) so that possible effects due to texture do not affect the results. In particular, we are studying the dependence of the threshold specific energy for the dispersion of targets ( $Q_D^*$ ) as a function of its mass and of the momentum of the projectile. This is meant to be a first step in the determination of “scaling laws” for GA.

In some cases (GA of 1 km and 100 km) the dependence of the ratio of mass re-accumulated after a collision on a GA on its texture (that is, the relative size of components with respect to the former GA size) is studied.

First results from the numerical experiments performed are presented