

In this work, we constructed a new model for the collisional evolution of the Main Asteroid Belt. Our goals are to test the scaling law from the work of Benz & Asphaug (1999) and ascertain if it can be used for the whole belt. We want to find initial size-frequency distributions (SFDs) for the considered six parts of the belt, and to verify if the number of asteroid families created during the simulation matches the number of observed families as well. We used new observational data from the WISE satellite (Masiero et al., 2011) to construct the observed SFDs. We simulated mutual collisions of asteroids with a modified Boulder code (Morbidelli et al., 2009), in which the results of hydrodynamic (SPH) simulations from the work of Durda et al. (2007) are included. Because material characteristics can affect breakups, we created two models — for monolithic asteroids and for rubble-piles (Benavidez et al., 2012). The results for monolithic and rubble-pile asteroids are comparable and in both cases the number of created families is, within uncertainties, consistent with the observations. A disagreement of the SFDs for a limited size range $D \simeq 1$ to 5 km is a good motivation to conduct new SPH simulations with relatively small targets.