NEW MODEL FOR THE AGE DETERMINATION OF LUNAR REGIONS

S. Marchi[1,2], S. Mottola[2], G. Cremonese[3], M. Massironi[4] and E. Martellato[3]
[1]Dept. of Astronomy, Padova University, Italy (simone.marchi@unipd.it), [2]DLR, German Aerospace Center, Germany, [3]INAF-Astronomical Observatory of Padova, Italy, [4]Dept. of Geology, Padova University, Italy.

Based on the work by Bottke et al. (2005) modeling the current population of near-Earth asteroids, we derive the expected size and velocity distribution of the impactor flux on the Moon. By using a realistic impact scaling law, we convert the impactor flux into a crater frequency-size distribution. Furthermore, by comparing our predicted cumulative crater distribution with lunar crater counts from regions for which absolute ages from isotope dating are available, we derive a model lunar chronology. The latter, as well as the crater frequency-size distribution, are then compared with the Neukum lunar chronology and the Neukum Production Function, respectively, and the differences are discussed. Further, we extend the results for the lunar chronology to predict the cratering record and chronology at Mercury.