

Analysis of the Impact Crater Balzac of Mercury

GABRIELE CREMONESE¹, ELENA MARTELLATO¹,
FRANCESCO MARZARI², MATTEO MASSIRONI²,
MARIA TERESA CAPRIA⁴

¹*INAF-OAPD*

²*University of Padova*

³*University of Padova*

⁴*INAF-IASF*

The size of an impact crater depends on many parameters. As a consequence, it is a demanding task to derive the physical and dynamical properties of the projectile from the knowledge of the crater diameter alone. This work reports a preliminary analysis of the Balzac impact crater on Mercury, based on the Mariner 10 images. The impact velocity and the diameter of the projectile are calculated taking into account the melt production at the initial phases of the crater formation. We have used the experimental law proposed by OKeefe and Ahrens (1982), giving the ratio between melt and projectile mass as a function of the square of the impact velocity, together with the classical scaling law. The calculations have been performed for different meteoroid compositions (iron, basalt, chondrite, and ice).