



Oblique Incidence Impacts in the Laboratory and on Planetary Scales

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Most hypervelocity impact experiments in the laboratory are conducted at normal incidence. However, it has long been known that in space the mean angle of incidence from the vertical is 45° . Results will be presented from impacts (using a two stage light gas gun in the laboratory) onto a variety of materials (rock, glass, ice, metal, aerogel) using spherical impactors. In each case how non-normal incidence changes the resulting craters will be discussed. Even for small changes from normal incidence, crater depth is quickly affected. However, crater shape (i.e. circularity) is only influenced for extreme non-normal impacts. Methods of how to recognize non-normal incidence from the observed crater will also be discussed. Finally, implications for, and examples from planetary scale impacts will be presented. In particular it will be shown that the observed rate of non-circular craters on rocky bodies agrees reasonable well with predictions based on laboratory results (see Burchell and Whitehorn (2003) *Monthly Notices Royal Astron. Soc.* **341**, 192 – 198).