2.2.7 Measurements of Impact Ejecta Parameters in Crater Simulation Experiments

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Ejecta parameters such as masses and velocities as a function of ejection angle have been determined in impact experiments performed with a light gas gun. Impact plasma detectors and secondary targets mounted around the primary impact site served for the detection of secondary particles.

The fraction of mass ejected with velocities $\gtrsim 3$ km/s is only a factor of 10^{-4} times the mass of the primary projectile.

A conservative calculation shows that the contribution of secondary microcraters (caused by fast ejecta) to primary crater number densities (caused by interplanetary particles) on lunar rock surface is on the statistical average below 1 % for any lunar surface orientation. Therefore lunar samples showing favorable exposure conditions can be considered as good detectors for interplanetary particles exposed over geological periods of time.

Calculation of the dust flux enhancement due to moon ejecta turned out to be in good agreement with Lunar Explorer 35 in situ measurements.

Full paper: Schneider, E. (1975), "Impact Ejecta Exceeding Lunar Escape Velocity", published in The Moon 13, 173.