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The development of a smaller Asay foil diagnostic DAVID BELL, NATHAN ROUTLEY, GLENN WHITEMAN, PETER KEIGHTLEY, AWE — The Asay foil has been a ubiquitous diagnostic in ejecta research since its design was first reported. An Asay foil is a foil of a known mass, whose change in velocity, as it is impacted by ejecta, is measured using velocimetry. The mass of the impacting ejecta can then be inferred from the change in momentum of the foil. To field an Asay foil requires the foil to be held in position; this is normally achieved by holding the foil at its edge. However, holding a foil at its edge perturbs the movement of the foil and undermines the assumptions used to calculate the mass of ejecta. One approach, to limit the perturbation, is to make the foil sufficiently large so that the centre of the foil is not influenced by its edge for the duration of an experiment. Research has been conducted to minimise the perturbation caused by holding the foil and therefore develop a smaller diameter Asay foil. A number of Asay foil designs were investigated and then fielded on gas gun driven ejecta experiments. The results from the Asay foils are reported and compared for consistency and also compared with results from piezoelectric probes. The research has resulted in a smaller diameter Asay foil being developed which has allowed smaller areas of ejecta sprays to be measured.

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