PREDICTING THE BALLISTIC RESPONSE OF ALUMINIUM SANDWICH PANELS

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This paper presents research on developing of a predictive modelling capability for ballistic impact on an aluminium sandwich panels. A predictive modelling capability supports the design of capture and deorbit missions for large items of space debris such as satellites and rocket upper stages.

A detailed explicit finite element model of the panel was built and results were compared with experimental data to investigate key modelling assumptions. The primary assumptions influencing the model behaviour were the strength and failure of the aluminium face sheets and the friction between projectile and panel. The model results showed good agreement with experimental results for an ogive nose projectile, but overestimated the exit velocity for a flat nose projectile where different behaviour of the honeycomb core is a modelling challenge.