

Energy Absorption of Structures and Materials

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Abstract: Energy absorbing performance of structures has been studied extensively with a primary aim to improving the crashworthiness performance of automobile and aircraft structures, although findings from these investigations are increasingly important in designing highway structures, bridges and buildings in order to minimise catastrophic failure from impact loadings. This paper summarises several recent fundamental studies of crushing of structures and materials; they include axial crushing of circular tubes, splitting of square and circular tubes, transverse piercing of square tubes, experimental determination of tearing energy, cutting of a plate by a wedge and, finally, crushing of honeycombs and aluminium foams. These cases could be incorporated in the design of vehicle structures for enhanced crashworthiness.