

Abstract Submitted
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Experimental observation of dynamic ductile damage development under various triaxiality conditions LAURIANNE PILLON, LISE-MARIE ADOLF, CEA — Fracture in ductile materials finds its origin in microscopic mechanisms: the nucleation of voids that grow and coalesce in order to form a crack. The most popular of these models, proposed by Gurson, aims at describing the damage development with respect to the plastic behavior of porous material. The Gurson model has been extended by Perrin to describe damage evolution in ductile viscoplastic porous materials. The Gurson-Perrin model (GPm) allows representing damage development with respect to the stress triaxiality and strain-rate conditions. We propose a new experimental design able to test and validate the GPm under various dynamic conditions and for different triaxiality levels. The experimental project will be detailed. A notch is drawn in the Cu cylindrical target where damage develops and the local failure occurs. A variation of the notch radius enables a variation in the triaxiality level. Three notch radii have been tested. Observations with numerical cameras allow following the shape of the notch, a characteristic of damage development. Several PDV measurements have been performed around the target. A first analysis of this experimental process will be shown and comparisons with numerical simulations will be presented.

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