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Experimental and numerical techniques to investigate and to model dynamic fragmentation of laser shock-loaded metals THIBAUT DE RESSEGUIER, EMILIEN LESCOUTE, CNRS, JEAN-MARC CHEVALIER, PIERRE-HENRI MAIRE, CEA-CESTA, JEROME BREIL, GUY SCHURTZ, CELIA — In this paper, complementary techniques are combined to investigate dynamic fragmentation and shrapnel generation in laser shock-loaded samples of aluminium and gold, which will be two constituents of the target assemblies designed for the inertial confinement fusion (ICF) experiments to be performed on large scale laser facilities such as the *National Ignition Facility* in the USA or the *Laser MégaJoule* in France. Fast optical transverse shadowgraphy is used to observe and analyze fragment ejection while Photonic Doppler Velocimetry (PDV) provides time-resolved measurements of the free surface velocity. Experimental results are compared with two-dimensional numerical simulations involving a phenomenological fragmentation model based on a probabilistic distribution of material tensile strength within the sample. Although not physically-based at this preliminary stage, the model is shown to provide consistent predictions over the explored range of sample thickness and laser intensity.

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