

Abstract Submitted  
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**Dynamic tensile response of an alumina ceramic under 1D-stress state** JEAN-LUC ZINSZNER, BENJAMIN ERZAR, CEA Gramat, CEA GRAMAT TEAM — Ceramics are particularly well suited to build protective structures. However, the maximum tensile stress that the material can withstand is generally ten times less than their compressive strength. The knowledge of the dynamic tensile behavior of ceramics is essential to simulate their ballistic response. Spalling tests by means of plate impact tests are generally performed to characterize the dynamic tensile strength of ceramics. Recently, the high-pulsed power generator GEPI, producing a ramp loading, has been used to perform shockless spalling tests. It allowed highlighting the strong strain-rate sensitivity of the dynamic tensile strength of ceramics in the range  $10^3$ - $10^4$  s<sup>-1</sup>. In this work, a new spalling technique using the GEPI machine is proposed. Instead of characterizing the material in a one-dimensional strain state, the use of small diameter cylindrical specimen allows ensuring a one-dimensional stress state. This new spalling configuration has been applied on alumina specimens at strain-rates of about  $10^4$  s<sup>-1</sup>. The experimental results highlight the influence of the loading state on the dynamic tensile response of an alumina.

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