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Void growth in ductile materials LAURIANNE PILLON, LAURENT SOULARD, CEA, DAM, DIF, F-91297 Arpajon Cedex, France — Breaking in ductile materials occurs by nucleation, growth and coalescence of voids. Several models aim at describing the evolution of cavities by accounting for different properties. Influence of linear elasticity [1], compressibility [2], viscoplasticity [3], triaxiality [4] have been inspected. Inertial effects are supposed to play an important role at high strain rates [1]. In this study, we propose to develop an extension of an existing model [2] in order to account for inertial effects and compressibility in a linear elastic and viscoplastic material. We compare the results of the model to the behavior of a hollow sphere described by a hydrocode (Finite Volume). The material is supposed to be elastic viscoplastic. We found a good agreement in a large range of solicitations. We measure the influence of each contribution (linear elasticity, viscoplasticity, compressibility, inertial effects) on the overall behavior of the hollow sphere and for different materials. References [1] M. N. Carroll and A. C. Holt, J. Appl. Phys., 43, p. 1626 (1972) [2] C. Denoual and J.M. Diani, Schock Compression of condensed Matter, (2001) [3] J. N. Johnson, J. Appl. Phys., 52, p. 2812-2825, (1981) [4] A.L. Gurson, J. Eng. Mater. Technol, 99, pp 2-15, (1977)

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