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Rayleigh-Taylor instabilities and strength model simulations at high pressures and strain rates DANIEL ORLIKOWSKI, HYE-SOOK PARK, CHRIS M. WEHRENBERG, JIM MCNANNY, SHON T. PRISBREY, ROBERT RUDD, NATHAN R. BARTON, Lawrence Livermore National Laboratory, RT STRENGTH TEAM — Recent Rayleigh-Taylor instability experiments on tantalum have been performed beyond 3 Mbar pressures at strain-rates greater than 10^6 s^{-1}. Through comparison with hydrodynamic simulations, the growth of the ripples after material acceleration in the experiments indicates that a stiffer material response is required than current strength models would suggest. Through simulations we have explore several variable changes to a multi-scale strength model developed at Lawrence Livermore Nat. Lab., specifically the dislocation density and the Taylor hardening related parameters. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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