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Reduced mixing in ICF with early-time interface acceleration[1] CHRISTOPHER WEBER, D CLARK, D CASEY, G HALL, O JONES, O LANDEN, A PAK, V SMALYAK, Lawrence Livermore Natl Lab — In inertial confinement fusion (ICF) implosions, the interface between the cryogenic DT fuel and the ablator is unstable to shock acceleration (the Richtmyer-Meshkov instability, RM) and constant acceleration (Rayleigh-Taylor instability, RT). If, however, the constant acceleration is in the direction of the lighter material (negative Atwood number), the RT instability produces oscillatory motion that can stabilize against RM growth. Theory and simulations suggest this scenario occurred at early times in the higher adiabat "big-foot" implosions, possibly explaining their favorable performance compared to 1D simulations. This characteristic can be included in newer, lower adiabat designs. These designs can potentially improve compression while minimizing ablator mixing into the DT fuel.

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