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Ultra-high mode mix in low-adiabat National Ignition Facility National Ignition Campaign implosions ROBERT SCOTT, Rutherford Appleton Lab, CENTRAL LASER FACILITY TEAM — This work re-examines a sub-set of the 'slow-rise', low adiabat implosions from the National Ignition Campaign using the Hyades radiation-hydrodynamics code in an effort to better understand potential phenomenological sources of 'excess' mix observed experimentally. An extensive effort has been made to match both shock-timing and backlit radiography (Con-A) implosion data in an effort to reproduce the experimental conditions as accurately as possible. A ˜30% reduction in ablation pressure at peak drive is required to match the experimental data. This reduced ablation pressure allows the ablator to decompress, in turn causing the DT ice-ablator interface to go Rayleigh-Taylor unstable early in the implosion acceleration phase. Post-processing the runs with various mix models indicates high-mode mix from the DT ice-ablator interface may penetrate deep into the hotspot. This work offers a potential explanation of why these low adiabat implosions exhibited significantly higher levels of mix than expected from high-fidelity multi-dimensional simulations. Through this new understanding a possible route forward for low-adiabat implosions on NIF is suggested.

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