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**Studies of Rayleigh-Taylor and magneto-Rayleigh-Taylor instabilities in planar and cylindrical geometries** CAMILLE SAMULSKI, BHUVANA SRINIVASAN, Virginia Tech, MARIO MANUEL, General Atomics — Inertial confinement fusion experiments have identified the RT (Rayleigh-Taylor) instability as one of the largest inhibitors to achieving fusion. Consequently, understanding the impacts of externally applied magnetic fields on the growth of RT during implosion deceleration may allow for methods to mitigate the instability growth. A study in Cartesian and cylindrical geometry presents significant RT growth during the deceleration phase of imploding liners. Additionally, the impact of an externally applied magnetic field on MRT (magneto-Rayleigh-Taylor) growth and magnetic field strength is explored in an effort to mitigate the MRT growth. Cylindrical parameters are derived from experimental designs for Omega and NIF shots. FLASH's MHD and resistive-MHD capabilities are used to model the imploding cylinders. This work was supported by a subcontract from the Los Alamos National Laboratory and US DOE grant SC0020055.

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