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Can high acceleration ICF target designs reduce the number of Rayleigh-Taylor exponentiations?[1] MAX TABAK, Lawrence LIvermore National Laboratory — The number of e-foldings for the classical Rayleigh-Taylor instability is linear in the velocity change. The required velocity change is set by fusion ignition conditions. However, the number of e-foldings is influenced by how fast this velocity change can be obtained. Shorter acceleration distances result in a lower number of e-foldings. For fixed drive intensity, this suggests a counter-intuitive design feature: increase the shell aspect ratio and the convergence ratio(for fixed fuel mass). This will produce high velocity in a short distance, but then what? If we continue to drive the shell at peak intensity, the shell will accelerate far past the optimal velocity and will burn-through. If we turn the drive off at this time, the shell will disassemble during the long coasting phase and jump to high adiabat at shell stagnation. The required pulse shape will reduce the drive after a required velocity is reached and later increase the drive to recompress the shell and lower its Mach number. Progress on this program will be discussed.

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