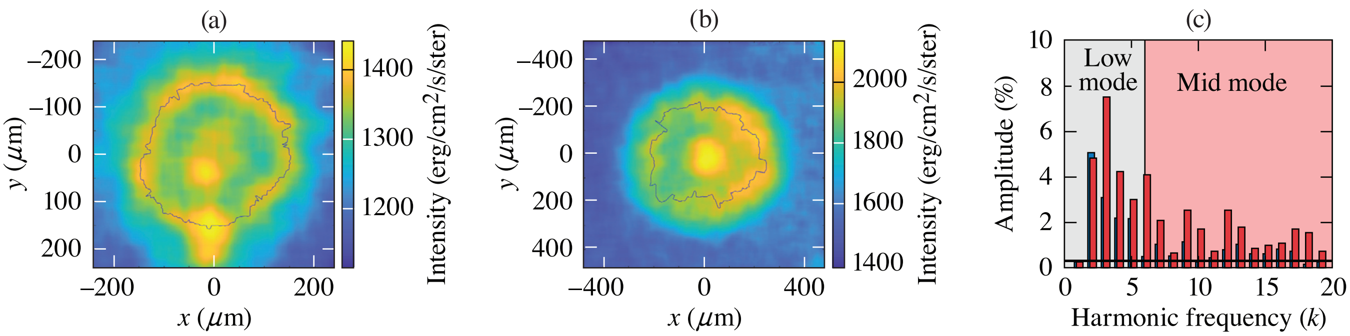
About the Cover:

The cover picture shows density (top row) and temperature (middle row) maps from 3-D *ASTER* simulations of a DT cryogenic implosion with a beam-to-target ratio of $R_b/R_t = 0.75$, and post-processed synthetic x-ray images (bottom row) for three different phases of the implosion: deceleration (left column), stagnation (middle column), and post-stagnation (explosion) (right column). These maps cover an area of 400 μm $\times$ 400 μm. The low-density regions in the shell in the deceleration phase correspond to the regions of the shell that are broken during the stagnation and post-stagnation phases. The post-stagnation x-ray image correlates well with the density profile, where the brightest regions in the image correspond to the shell locations where material is being ejected. Compared to the deceleration and stagnation phases, the structures in the post-stagnation x-ray image are spatially larger and are easier to analyze.

Simulations predict that the coupling of the laser energy to the target can be increased by lowering R_b/R_t. This change, however, also increases beam-overlap perturbations that cause distortions in the dense shell and lead to shell breakup at stagnation. To diagnose the shell breakup, the x-ray self-emission from the implosions was recorded during the post-stagnation phase with a filtered 16-pinhole array imager and x-ray framing camera using an exposure time of ~40 ps. The figure below shows experimental images obtained in implosions with different R_b/R_t. A Fourier decomposition is applied to the outer peak signal of the images to diagnose the low- and mid-mode asymmetries in the implosion. The images and modal analysis show higher low- and mid-mode amplitudes for the implosion with $R_b/R_t \sim 0.77$ compared with the implosion with $R_b/R_t \sim 0.95$, which indicates a better hydrodynamic instability for the implosion with higher R_b/R_t.



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