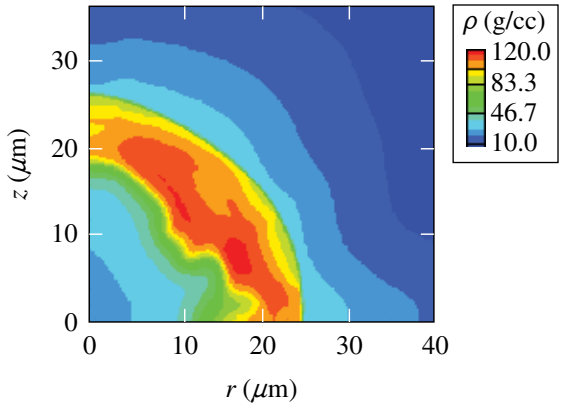
About the Cover:

The cover photo highlights scientist Dr. Radha Bahukutumbi presenting new OMEGA polar-drive target designs. In the background is a schematic that illustrates the 40 OMEGA beams that emulate the NIF x-ray-drive beam geometry. Being an indirect-drive implosion facility, NIF has no laser beams at the equator, which requires modification of the traditional, symmetric direct drive to achieve adequate symmetry. The concept of using the NIF laser with its beams repointed toward the equator is called polar drive and enables one to conduct direct-drive experiments to be carried out on the NIF while it is in its standard x-ray-drive configuration. To emulate polar drive on OMEGA, 20 equatorial beams are dropped and the remaining 40 beams are repointed toward the target's equator. The OMEGA experiments yield valuable data to develop and validate models of laser-energy deposition, heat conduction, nonuniformity growth, and fuel assembly in polar-drive geometry.



The figure on the left shows a plot of the isodensity contours of a stagnated shell at peak compression obtained from a two-dimensional simulation using the radiation–hydrodynamics code *DRACO*. This OMEGA polar-drive implosion uses a 600-μm-outer-diameter cryogenic-DT fuel target driven with 12.8 kJ of laser energy at a NIF-relevant 7×10^{14}-W/cm^2 intensity and attains a peak fuel areal density of ~240 g/cm^2. An optimized combination of beam pointings, energies, and profiles results in a nearly symmetrical stagnated core. Experiments using these high-intensity implosion designs will commence when new smaller-beam-diameter OMEGA phase plates are obtained.

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