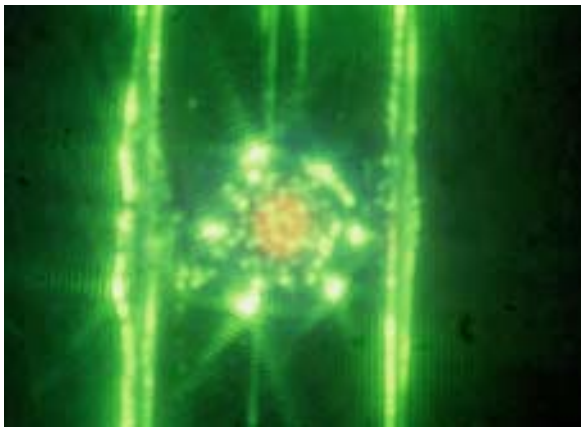
About the Cover:

The highlight of this issue is an article about the first cryogenic implosions of D_2-filled targets on the 60-beam OMEGA laser. This is a major milestone in the program that will eventually lead to direct-drive, high-gain implosions on the National Ignition Facility. A tremendous amount of preparatory work must be done to carry out these experiments. The targets must be filled with D_2 gas in the Fill/Transfer Station (FTS), slowly cooled to below 18.72 K, and then gently heated with an IR laser. This produces a uniform layer of D_2 ice on the inner surface of the capsule. The FTS is not connected to the OMEGA target chamber, so the target must be transported to the chamber in a 2300-kg moving cryostat transfer cart (MCTC) supported on air bearings. The upper left photo shows Senior Technical Associates Karl Lintz and Sal Scarantino beginning the transfer process by undocking the MCTC from the FTS. In the upper right photo, they carefully maneuver the MCTC through the hallway. In the experimental area (lower left photo), under the target chamber, the level of auxiliary support is evident. Umbilical cables and hoses supply electricity and compressed air to the cryostat while Technical Associates Dale Guy and James Sailer monitor the status of the instruments that keep the temperature of the target within 0.5 mK° of the triple point of D_2. Once the MCTC is positioned under the target chamber, a vacuum-to-vacuum connection must be established (lower right photo). Then the target can be lifted into the target chamber and imploded by the 60-beam OMEGA laser (center photo).



The central image on the cover is a visible light image of the imploding target on shot 27452 taken with the Kowaluk camera (see LLE Review Volume 89). The 60 bright white spots are the UV beams of OMEGA. The orange ball in the center is reflected UV light, downshifted in frequency by the expanding laser-generated plasma from the target. The intense lines on either side of the target are the berylium stalks used to stiffen the target support. The spider webs that hold the target in place show up as the fainter lines (above and below the target) glowing in the incident laser light.

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