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Plasma Jet Interaction with Thomson Scattering Probe Laser[1]
TOM BYVANK, JACOB BANASEK, WILLIAM POTTER, BRUCE KUSSE, Cornell University — Thomson scattering systems can diagnose plasma temperatures and velocities. When probing a plasma jet with the Thomson scattering laser, we observe a laser-plasma interaction that inputs energy into the plasma jet. The absorbed energy causes a bubble of low density (~5*10^17 cm^-2) in the jet (unperturbed ~10^18 cm^-2). A pulsed power machine (1 MA peak current, 100 ns rise time) with a radial foil (15 μm thick Al) configuration generates the plasma jet. We compare the effects of using 10 J and 1 J laser energies, for which the 10 J laser is a larger perturbation. We discuss how the interaction affects the Thomson scattering temperature and velocity measurements.

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