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### 4.40 Measuring across shock fronts using the Imaging Thomson Scattering diagnostic at OMEGA

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We report use of the spatially resolved imaging Thomson scattering diagnostic (ITS) to measure plasma properties across a shock on the OMEGA laser. Although the use of x-ray Thomson scattering to measure shock properties has been demonstrated, similar use in the optical regime has not been widely reported. The shocks are generated in a low-density, laser-driven, collisional carbon plasma impinging on a magnetized wire obstacle. Probing 42 degrees to the shock normal with a  $2\omega$  beam, the ITS diagnostic successfully measured plasma parameters in and across the shock front. From the scattered spectra we observe electron number density jumps consistent with those of strong shocks. We compare how the probe beam affects the measurement for two pulse durations and energies, and discuss the issues that arise when probing a shock. This work is funded by the U.S. Department of Energy, through the NNSA-DS and SC-OFES Joint Program in High-Energy-Density Laboratory Plasmas, grant number DE-NA0002956, and the National Laser User Facility Program and William Marsh Rice University, grant number, R19071, and through the Laboratory for Laser Energetics, University of Rochester by the NNSA/OICF under Cooperative Agreement No. DE-NA0001944.

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