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Polarization Rotation Caused by Cross-Beam Energy Transfer in Direct-Drive Implosions D.H. EDGELL, R.K. FOLLETT, J. KATZ, J.F. MYATT, J.G. SHAW, D. TURNBULL, D.H. FROULA, Laboratory for Laser Energetics, U. of Rochester — The first evidence of polarization rotation caused by cross-beam energy transfer (CBET) during direct-drive implosions has been provided by a new beamlets diagnostic that was fielded on OMEGA. Beamlet images are, in essence, the end points of beamlets of light originating from different regions of each beam profile and following paths determined by refraction through the coronal plasma. The intensity of each beamlet varies because of absorption and many CBET interactions along that path. The new diagnostic records images in two time windows and includes a Wollaston prism to split each beamlet into two orthogonal polarization images recording the polarization of each beamlet. Only the common polarization components couple during CBET so when each beam is linearly polarized, CBET rotates the polarization of each beam. A 3-D CBET postprocessor for hydrodynamics codes was used to model the beamlet images. The predicted images are compared to the images recorded by the new diagnostic. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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