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2D and 3D PIC Modeling of Transmission Through Thin Targets Induced by a Relativistically Intense 30 fs Laser Pulse[1] PRESTON POZDERAC, ANTHONY ZINGALE, ALEXANDER KLEPINGER, DEREK NASIR, NICK CZAPLA, GERMAN TISCARENO, Ohio State Univ - Columbus, GINEVRA COCHRAN, Lawrence Livermore National Laboratory, DOUGLASS SCHUMACHER, Ohio State Univ - Columbus — Induced transparency during relativistically intense laser-matter interactions is still not a fully understood phenomenon. There have been a few direct measurements of this process (for example, Palaniyappan, *et al., Nature Physics* **8**, 763 (2012) and Bagnoud, *et al.,* Phys. Rev. Lett. **118**, 255003 (2017)) however recent theory and computational results (Stark, *et al.,* Phys. Rev. Lett. **115**, 025002 (2015)) predict a polarization dependent transmission that has not been experimentally verified. We utilized a pump-probe configuration at the OSU Scarlet Laser Facility to measure the polarization dependent transmission through <25 nm thick liquid crystal targets with femtosecond temporal resolution. 2D and 3D LSP PIC simulations of the experiment were performed for different probe polarizations and temporal delays between pump and probe. We compare the simulation and experimental results and then use the simulations to analyze conditions of the induced transparency within the target.

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