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Nonlinear Polarization Mixing of Laser Beams Interacting with a Plasma¹ EUGENE KUR, MALCOLM LAZAROW, JONATHAN WURTELE, University of California, Berkeley, PIERRE MICHEL, Lawrence Livermore National Laboratory — Understanding the interaction of overlapping laser beams in a plasma is important for precise control of laser energy flow at the National Ignition Facility (NIF) and for creating plasma-based high-power optical components. These overlapping beams modify each others energy and polarization through a ponderomotive interaction with the plasma [1]. The interaction of the beams is fundamentally a two-dimensional problem [2-4], which has important consequences for both NIF and plasma photonics (due to the effects on polarization and energy exchange). We present theoretical and numerical results detailing the effects of the interaction geometry on the beams. [1] Michel, P., et al. Physical review letters 113.20 (2014): 205001. [2] McKinstrie, C. J., et al. Physics of Plasmas 3.7 (1996): 2686-2692. [3] Lazarow, M., et. al. 49th Annual Anomalous Absorption Conference. Peaks Hotel, Telluride, Colorado. 10 June 2019. Poster Presentation. [4] Kur, E., et. al. 49th Annual Anomalous Absorption Conference. Peaks Hotel, Telluride, Colorado. 10 June 2019. Poster Presentation.

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