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High Order harmonic generation from laser pulses interacting with solid density plasma at intensities in excess of 10^{21} W/cm² KARL KRUSHELNICK, FRANKLIN DOLLAR, VLADIMIR CHVYKOV, GALINA KALINTCHENKO, ANATOLY MAKSIMCHUK, ALEC THOMAS, VICTOR YANOVSKY, CALVIN ZULICK, University of Michigan — Using the HERCULES laser system operating at powers greater than 150 TW, experiments were performed at the Center for Ultrafast Optical Science at the University of Michigan to examine the generation of high order harmonics at very high intensity from interactions with solid density plasmas. Harmonics greater than the 60th order were measured and the effect of incident laser polarization was investigated. The angular divergence of the emitted harmonics was also measured and it was found that the harmonic frequencies shifted depending on the observation angle. It is possible that such shifts may be caused by the motion of the critical surface during the interaction. Particle in Cell simulations were performed to model these experiments and will also be discussed.

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