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High order harmonic generation with femtosecond mid-infrared laser¹ JINPU LIN, JOHN NEES, KARL KRUSHELNICK, Univ of Michigan - Ann Arbor, FRANKLIN DOLLAR, TAM NGUYEN, Univ of California - Irvine — There has been growing interest in high order harmonic generation (HHG) from laser-solid interactions as a compact source of coherent x-rays. The ponderomotive potential in laser-plasma interactions increases with longer laser wavelength, so there may be significant differences in the physics of harmonic generation and other phenomena when experiments are conducted with mid-infrared lasers. Previous experiments, however, have been done almost exclusively with near-infrared lasers. In this work, we report the results of experiments performed with millijoule, 40 fs, 2 m laser pulses generated by an optical parametric amplifier (OPA) which are focused onto solid targets such as silicon and glass. The HHG efficiency, polarization dependence, and x-ray emission are studied and compared to measurements with near-infrared lasers.

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