Abstract Submitted
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A Geometry for Sub-Nanosecond X-Ray Diffraction from Laser-Shocked Polycrystalline Foils[1] JUSTIN WARK, ANDREW HIGGINBOTHAM, GILES KIMMINAU, WILLIAM MURPHY, BOB NAGLER, THOMAS WHITCHER, University of Oxford, UK, JAMES HAWRELIAK, DAN KALANTAR, HECTOR LORENZANA, BRUCE REMINGTON, LLNL, HUW DAVIES, LEE THORNTON, NIGEL PARK, AWE, Aldermaston, UK, STAN LUKEZIC, Pyramid St, Livermore, CA — In situ picosecond X-ray diffraction has proved to be a useful tool in furthering our understanding of the response of shocked crystals at the lattice level. To date the vast majority of this work has used single crystals as the shocked samples, owing to their diffraction efficiency, although the study of the response of polycrystalline samples is clearly of interest for many applications. We present here the results of experiments to develop sub-nanosecond powder/polycrystalline diffraction using a cylindrical pinhole camera. By allowing the incident X-ray beam to impinge on the sample at non-normal angles, the response of grains making a variety of angles to the shock propagation direction can potentially be interrogated.

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