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Surface Shear Strain Measurements in Sweeping Wave Experiments LAWRENCE HULL, JAMES FAULKNER, MATTHEW BRIGGS, Los Alamos National Laboratory — Sweeping wave experiments create conditions of greater shear than corresponding one-dimensional motion experiments, and are of current interest for material damage characterization. Sweeping waves are also important with regards to the spectrum of applications of explosives driving metals. The intensity of the shear developed in a sweeping wave experiment may be monitored using crossed beams of Photon Doppler Velocimetry (PDV). During the time the material is traversing the volume defined by the crossed beams, the interferometer is measuring the velocity of the same mass element (approximately) from two directions. It is known that PDV measures the velocity component that lies along the beam direction, so that with crossed beams, two independent directions are simultaneously measured and therefore the *vector* velocity (both magnitude and direction) are captured. The vector velocity is readily related to the strain rates on the surface (after removing the rigid rotation rates), and the equations are integrated to obtain the strains.

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