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Experimental investigation of the lateral response of Bismuth under one-dimensional shock loading GLENN WHITEMAN, JEREMY MILLETT, AWE, GARETH APPLEBY-THOMAS, AMER HAMEED, DAVID WOOD, Cranfield University — Interest in the dynamic response of bismuth is largely derived from the existence of multiple phase transitions attainable with increasing pressure. In addition, its industrial use has grown in recent years (e.g. in solder as a replacement for lead), in part due to its relatively low toxicity. While some shock experiments have been conducted on bismuth they have largely concentrated on equation of state research. To the authors' knowledge the strength behaviour under shock is not prevalent in the literature. To this end, the shear strength response both at and behind the shock has been experimentally investigated using commercial stress gauges mounted in both longitudinal and lateral orientation with respect to the loading axis. Of particular note was the potential to observe the relatively low-pressure phase transitions in the shear strength response.

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