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**Shock Waves Generated by Exploding Bridgewires in Condensed Media** WILLIAM NEAL, Atomic Weapons Establishment, NATHANIEL SANCHEZ, BRIAN JENSEN, JOHN GIBSON, MIKE MARTINEZ, CHARLES OWENS, JONATHON RAMERO, DENNIS JARAMILLO, Los Alamos National Laboratory, ADAM IVERSON, CARL CARLSON, National Security Technologies, ALEX DERRY, Advanced Photon Source, Argonne National Laboratory, PAULO RIGG, Dynamic Compression Sector, Washington State University — An exploding bridgewire (EBW) detonator functions due to the electrical explosion of a metal wire in contact with a low-density explosive powder. The exact mechanism that transfers the energy from the wire to the explosive that leads to initiation is not well understood. One energy transfer theory is a shock-to-detonation transition. Due to difficulties involved due to the small length scales and the unsteady shock-wave, the shock-wave emanating from a exploding wire in a representative medium has not been measured. This study uses non-invasive ultrafast x-ray phase contrast imaging, taken using Los Alamos National Laboratory's IMPULSE system, and magneto-hydrocode simulations to characterise the shock-wave produced by an exploding bridge-wire in a non-reactive analogue porous medium. This effort will be used to determine if the shock-wave has sufficient magnitude and duration to initiate typical EBW detonator explosives.

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