

Abstract Submitted
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Electromagnetic Radiation From The High Strain Rate Fracture Of Mild Carbon-Steel WILLIAM BROWN, MARK SCHMIDT¹, Applied Research Associates, Inc, KENNETH CALAHAN, Serra Corporation — We present results of an experimental study of the back surface emission of electromagnetic radiation resulting from the impact fracture of mild carbon-steel at strain rates of approximately $10^6/\text{s}$. We obtained time-domain measurements of two perpendicular components of the electric displacement vector at distances of up to 20 m from the targets. Spectral analysis of these data provides results that are consistent with theoretical predictions of the strain-rate dependence of the Misra Effect. We provide evidence that this phenomenon, that has only been reported previously during quasi-static measurements, is also present during explosive and impact fracture conditions. This work supported by the Defense Threat Reduction Agency under contract DTRA01-01-C-0033.

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