

Abstract Submitted  
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**Shock interaction with an isotropic field of sound waves**<sup>1</sup> J.G. WOUCHUK, C. HUETE RUIZ DE LIRA, ETSII-INEI UCLM Ciudad Real 13071 Spain, A.L. VELIKOVICH, Plasma Physics Division, NRL, USA — Interaction of shock waves with vortical, entropic and acoustic preshock fluid perturbations must be well understood to study and model shock interaction with more general turbulent flows, which is important for ICF and many other areas. We focus here on the interaction of a shock front with a random isotropic field of acoustic waves. The dynamics of the shock interaction with a single-mode pre-shock acoustic perturbation field is analyzed in detail and mode averaging is performed to study the turbulence generated downstream. Analytical results are shown for the postshock turbulent kinetic energy, vorticity, acoustic energy flux, internal energy, and noise level as a function of the fluid compressibility and shock strength. Good agreement with previous theoretical results is demonstrated. Comparison to the shock interaction with vortical [J. G. Wouchuk *et al.*, Phys. Rev. E 79, 066315 (2009)] and entropic perturbations is also presented.

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J.G. Wouchuk  
ETSII-INEI Univ. Castilla La Mancha Campus  
s/n Ciudad Real 13071 Spain

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