

Abstract Submitted  
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**Interaction of a planar shock with an isotropic field of sound waves**<sup>1</sup> JUAN GUSTAVO WOUCHUK SCHMIDT, CESAR HUETE RUIZ DE LIRA, Universidad de Castilla La Mancha -Edificio Politécnico, ALEXANDER L. VELIKOVICH, Naval Research Laboratory - Plasma Physics — We present here an analytical model that describes the linear interaction of a planar shock front with a field of randomly oriented acoustic waves. The dynamics of the interaction with a single mode is studied in detail at first. The mode averaging is performed as usual, by integrating over the angle that the pre-shock mode wavenumber vector forms with the normal to the shock front. In this way, averages of the turbulent kinetic energy, vorticity, density and sonic flux are analytically obtained as functions of the fluid compressibility and the shock strength. Good agreement with previous numerical results has been obtained [K. Mahesh, S. Lee, S. K. Lele, and P. Moin, *J. Fluid Mech.* **300**, 383 (1995)]. Comparison to the shock interaction with vortical and entropic perturbations is also shown.

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