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The Interaction of a Homogeneous Field of Acoustic Waves with a Shock Wave YUCHEN LIU, LIAN DUAN, The Ohio State University — Direct numerical simulations (DNS) and linear interaction analysis (LIA) are used toexamine the significant flow characteristics associated with a homogeneous field ofacoustic waves passing through a nominally normal shock wave. The full-fledgednonlinear simulations and the linear analysis are enabled by a pre-cursor numericaldatabase of boundary-layer acoustic radiation that provides incident acoustic fields withhigh degree of physical realism and applicability. The research contributes to thefundamental understanding of the interaction of a shock wave with a field of turbulenceby characterizing its behaviors in the pure dilatational limit and complements existingstudies of shock/turbulence interaction with a vorticity-dominated incident turbulentfield.

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