

## Acoustic Field Generated by Instability Waves in the Transonic Regime

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We consider the problem of acoustic radiation generated by a spatial instability wave on a weakly-developing two-dimensional mixing layer. Assuming a WKBJ approximation for the instability wave, we compute the far pressure field by using a Fourier transform along the streamwise direction. Approximations for this pressure field are obtained by a steepest descent method when the WKBJ parameter goes to zero. A branch cut and several saddle points are shown possibly to contribute to the approximation. A detailed analysis of these contributions is provided when the instability wave is close to transonic near its maximum amplitude. This permits to explain the modifications of the far pressure field observed during a subsonic-supersonic transition.

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