Abstract Submitted
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**Startup process in Richtmyer-Meshkov instability**[1] MANUEL LOMBARDINI, D.I. PULLIN, California Institute of Technology — A simple analytical model is presented for the initial growth of the planar Richtmyer-Meshkov instability in the case of a reflected shock. The model captures the main features of the interfacial perturbation growth before the asymptotic linear regime is attained, over a wide range of incident shock Mach number and Atwood ratio. The problem is formulated in the general framework of the compressible Euler equations for ideal gases, and consists of solving the initial-value problem describing a shock impacting a slightly sinusoidally perturbed density interface. The equations are linearized about a base flow corresponding to the 1D Riemann problem of the shock interaction with an unperturbed interface. An appropriate scaling, similar to the Rayleigh-Jansen method, is then used to construct a perturbation expansion about the basic state. Linearized boundary conditions are applied at both reflected and transmitted perturbed shocks and at the contact interface. The zeroth order of the expansion is retained and leads to an explicit expression for the growth of the interface perturbation. Results are compared with computations obtained from two-dimensional, highly-resolved numerical simulations of the Richtmyer-Meshkov instability.

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