

BLAST ATTENUATION IN A VENTED TUBE

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The attenuation of a strong blast wave in a semi infinite tube is considered for the case where the upstream end of the tube is vented. Physically, the flow corresponds to situations wherein an explosion, within an infinite tube, results in an opening in the tube at the site of the explosion. The venting of blast heated gas, through the opening, provides an additional attenuation mechanism.

The present study considers inviscid flow, strong shocks and large times. In the latter limit, the disturbed flow is self similar, at each instant, and the shock motion has a power law dependence on time. The power law exponent is a function of the ration of vent area to tube area. Numerical results are given which cover the range where this ration goes from zero (unvented) to one (fully open).