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Experimental aeroacoustic investigation on a hot supersonic starting jet generated by a reflected type shock tube

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Abstract

Studies on jet noise are usually conducted on "transient" and "steady" jets. Transient jet refers to the staring processes on jet formation (e.g. initial shock wave and starting vortex ring). The quasi-steady jet forms after these transient phenomena. In the present study, the common facilities for studing the noise sources in the transient and steady jet are reviewed. In the next step design of a reflected shock tube is presented. This facility makes it possible to study the noise sources in both transient and steady jets. The results of experimental aeroacoustic studies on a hot supersonic jet with the facility are presented an analyzed for the next step. The Mach number of the generated jet is 1.4 with a total temperature of 950 K. Comparison of the results of the designed reflected shock tube with those of common facilities shows the advantages of reflected shock tube for experimental aeroacoustic studies on transient and steady hot jets.

Keywords: Aeroacoustic, Reflected Shock Tube, Transient Jet, Steady Jet.

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