

# NUMERICAL INVESTIGATION ON THE EFFECT OF GEOMETRIC PARAMETERS OF CHEVRON NOZZLE ON GENERATION OF STREAMWISE VORTICES IN HIGH SUBSONIC JETS

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## Abstract

Chevron nozzle is gaining popularity as a noise control device for jet noise reduction. Though it is the only noise control technique currently in use for commercial airliners, complete design methodology of chevrons is not available. In the present work, attempt is made to understand the effect of various geometric parameters of a chevron nozzle on the jet flow using commercial RANS based CFD solvers. Enhancement in mixing, which affects the acoustic signature of the jet, can be attributed to the strength of the streamwise vortices produced by chevrons. Hence major emphasis is given on analyzing the streamwise vortices formed in the jet flow from chevron nozzle. Various geometric parameters like different number of chevrons, their length and tip angles are employed on a 30 mm diameter nozzle producing  $M = 0.8$  jet for further investigation.

**Keywords:** Subsonic Jet, Chevron Nozzle, Vortex Flow