

Variable regimes and shock wave phenomena in converging-diverging nozzles

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Supersonic nozzles have many applications in the aerospace industry, including high-speed military jets, rockets and missiles. The traditional Convergent Divergent (CD) nozzle is a relatively simple device used commonly among most jets and rocket nozzles. Depending on the requirement of the thrust and its applications, the geometrical configuration of the nozzle varies. Current research is focused on study of the influence of nozzle geometry, operational conditions and pressure ratio on the flow properties in downstream direction and external region of the nozzle. The main focus is on modelling and analysis of shock waves formation and their impact on efficiency and exploitation.

Keywords: CFD modeling, Laval nozzle, shock waves, supersonic flow