

## Aerodynamic Modelling of Side Jet Influence on Body-Tail Configuration

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### **Abstract**

Computational study has been undertaken to investigate the aerodynamic influence of side jet on a supersonic body-tail missile configuration. Side jet or lateral jet control devices have been adopted for high maneuvering missiles and their interference on missile aerodynamics is mainly classified into two categories. They are local interaction caused by shock interaction phenomenon in body component and downstream interaction involving decrease of tail control effectiveness. To understand and quantify these two interactions, computational fluid dynamic method was setup and used. In detail, CFD solutions were used to extract jet amplification factors for the description of local interaction and to analyze vortical structure generated by jet eruption for the description of downstream interaction. With these results, aerodynamic force and moment model has been formulated and evaluated to future validation with wind tunnel test results.

*Keyword: side jet, lateral jet, aerodynamic interaction, jet amplification factor, jet vortex, aerodynamic model*