

# Concept: Conical Flow

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## 1. Definition and Introduction

An exact solution can be found to the conservations equations, in the case of supersonic flows over conical shapes at zero angle of attack. The conical flow idea holds that all properties are constant along any ray originating from the apex of the cone. The conical shock surface is one such ray, and the surface of the cone itself is another. The conical flow method starts with an assumed shape for the shock over the cone, then marches downstream along rays until streamlines until a conical surface is encountered, where the properties do remain constant. This then becomes the correct conical shape for the assumed shock geometry.

Using the idea of properties being constant along rays, the conservation equations are reduced to an ordinary differential equation, allowing easy numerical solution.