

The following web-based projects or programs are currently available. Please send email to Professor Aggarwal ([ska@uic.edu](mailto:ska@uic.edu)) for further details.

### **Program 1: Isentropic Flow Tables-I**

Given the Mach number and the ratio of specific heat, this program calculates the pressure, temperature, and other properties.

### **Program 2: Isentropic Flow Tables-II**

Given the pressure (pressure divided by the stagnation pressure) or temperature, and the ratio of specific heat, the program calculates the Mach number and other properties.

### **Program 3: Isentropic Flow Tables-III**

Given the area ratio ( $A/A^*$ ) and the ratio of specific heat, the program calculates the Mach number and other properties.

### **Program 4: Isentropic Flow Tables-IV**

This program can be used to analyze compressible flow in a variable-area duct. It can predict the variation of flow properties such as pressure, Mach number, velocity etc. as function of  $x$  in a converging-diverging nozzle for a range of back pressures ( $p_b/p_0$ ) including

- (i) isentropic subsonic and supersonic flow
- (ii) flow with normal shock which is located either inside (including the shock location) the nozzle or at the nozzle exit,
- (iii) flow with oblique shock (and shock angle) at the nozzle exit,
- (iv) underexpanded flow with expansion fan at the exit.

The program requires (1) the area distribution  $A(x)$ , (2) ratio of specific heat, and the back pressure  $p_b/p_0$ . The program is sufficiently interactive so that it makes predictions for a given  $p_b/p_0$ , and tells the user whether the flow is isentropic, or there is a normal shock (and where is it located) or an oblique shock in the system etc.