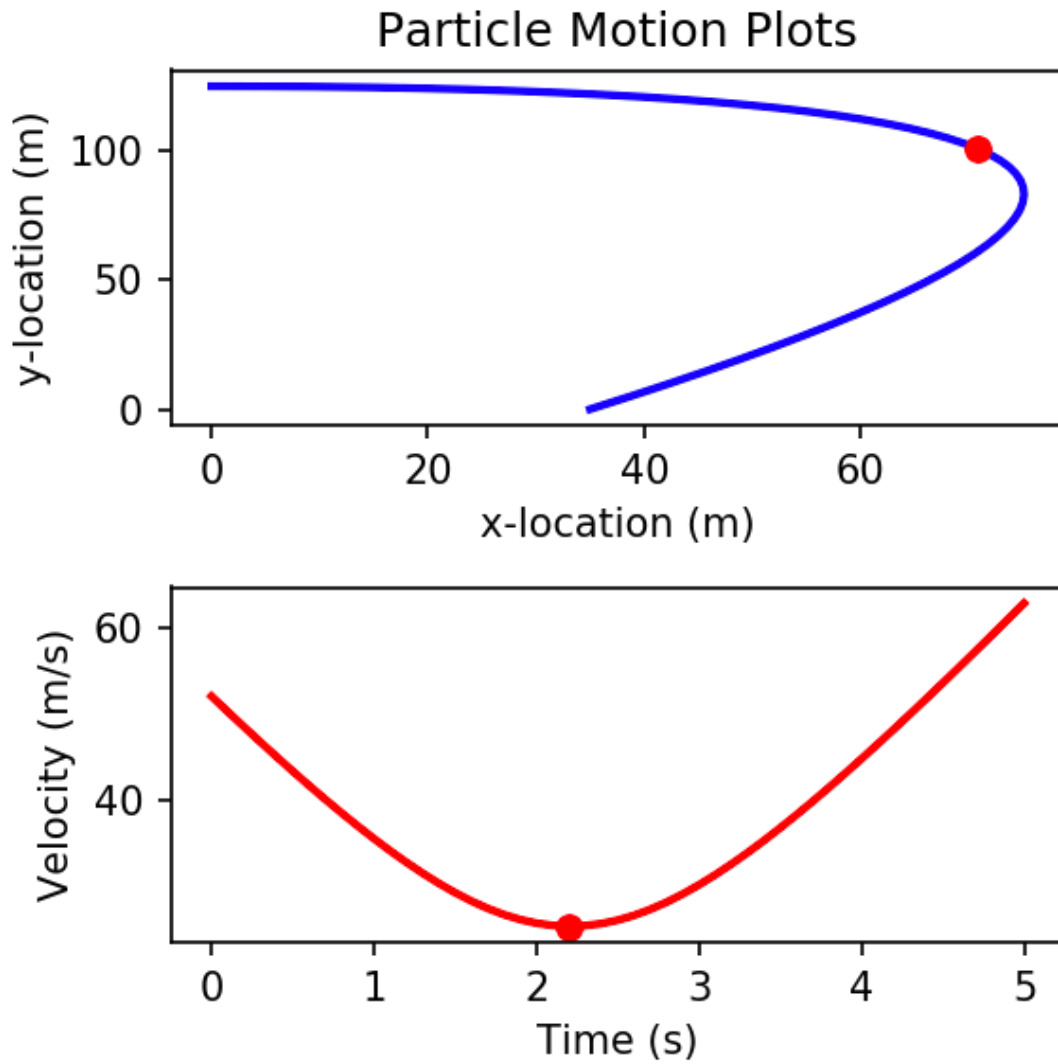Particle Motion
Brian Brady
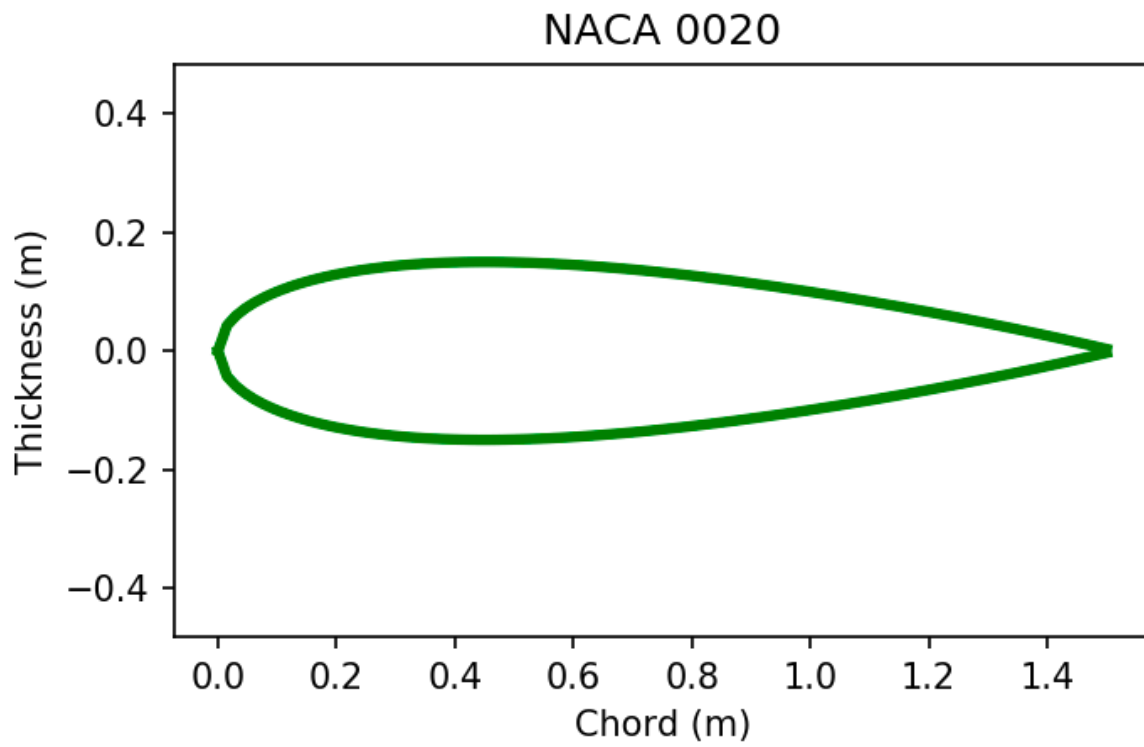
The minimum velocity is 25.25 m/s at a time of 2.20 seconds
The minimum velocity occurs at x,y = (70.84,100.80) meters

Particle Motion Plots

NACA Airfoil
Brian Brady

Enter the desired NACA number (i.e. 0020): 0020
Enter the desired chord length in meters: 1.5

NACA 0020

```
                        Ideal Gas Law

                          Brian Brady


Enter a list of temperatures in K separated by spaces: 100 200 300 400

Temperature = 100.0 K

  Volume (m³)     Pressure (Pa)

 ------------   ---------------

      1               831.45

      2               415.73

      3               277.15

      4               207.86

      5               166.29

      6               138.58

      7               118.78

      8               103.93

      9                92.38

     10                83.15


Temperature = 200.0 K

  Volume (m³)     Pressure (Pa)

 ------------   ---------------

      1              1662.90

      2               831.45
```
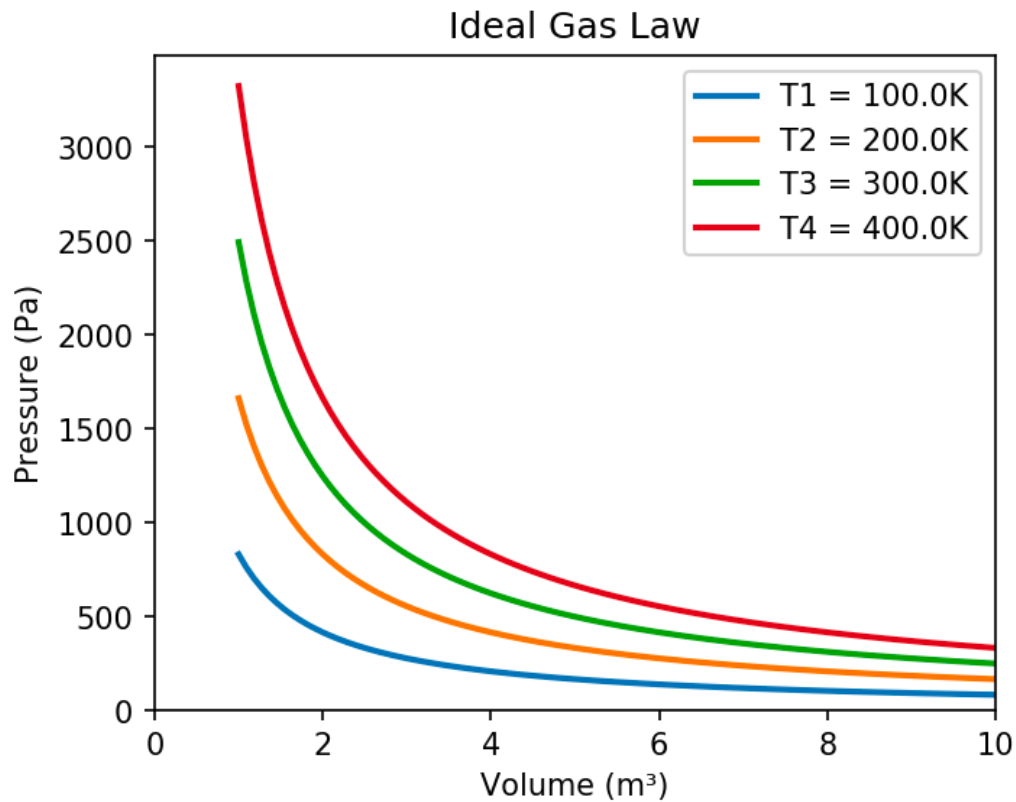
Above shows only a portion of the printed results to give you an idea of what it should look like.
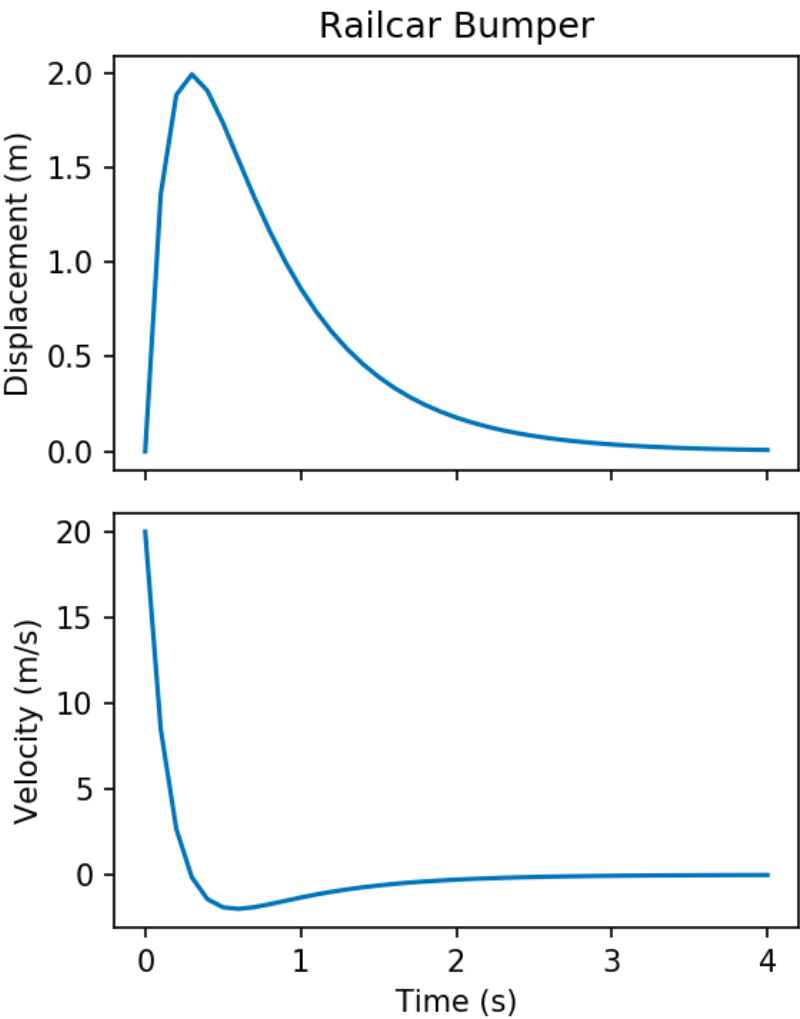
Below is only a portion of the actual results to give you an idea of what it should look like.

```
                Railcar Bumper Displacement
                        Brian Brady


    Time (s)      Disp (m)      Vel (m/s)
  -----------   -----------   -----------
     0.0           0.00          +20.00
     0.1           1.36          +8.48
     0.2           1.88          +2.67

      .

      .

      .

     3.7           0.01          -0.02
     3.8           0.01          -0.02
     3.9           0.01          -0.01
     4.0           0.01          -0.01


The maximum travel of the bumper is 1.993 meters
```

Beam Bending
Brian Brady

Enter the length of segment "a" in feet: 6
Enter the length of segment "b" in feet: 6
Enter the length of the beam in feet: 16
Enter the magnitude of the left distributed load in lbf/ft: 400
Enter the magnitude of the right distributed load in lbf/ft: 200

Reaction A is 2050.00 lbf and reaction B is 1150.00 lbf
Maximum moment is 5253.0 lbf·ft at 5.15 feet from left

Bending Moment of Beam with 2 Distributed Loads