

# THE LEVITATING BALL

## Concepts Illustrated:

(1) The Bernoulli Effect

**Time Requirements:** 5 minutes

**Grade Level of Audience:** This qualitative demonstration is suitable (and enjoyed) by students at all age levels.

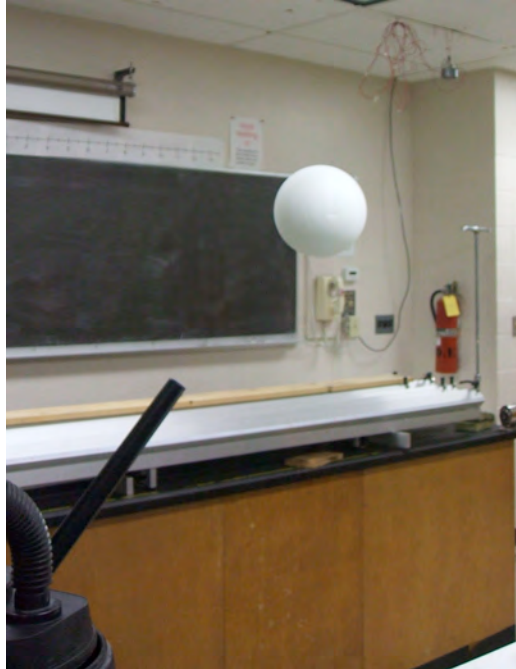
## **I. Materials and Equipment Utilized**

1. A Shop Vac or vacuum cleaner that has the ability to be switched to blower mode.
2. Various light weight balls (table tennis balls, 5" diameter Styrofoam ball, small beach balls, etc.)



## **II. Description of Set-up and/or Construction of Apparatus**

1. Switch vacuum hose, if necessary, to appropriate port, such that vacuum blows air out through the hose.
2. Test your ability to levitate the various balls you have in the stream of air BEFORE you show the demonstration. See how far you can point the stream of air to the side before the ball drops out of the moving air. Find some of these limitations BEFORE you present to an audience.



### **III. Details of Student Implementation**

1. The general idea being demonstrated is that the fast air moves across a surface, the lower the pressure exerted by the air. The moving column of air represents a column of lower pressure relative to the static air mass surrounding the moving air. As a result, light weight balls tend to hover or oscillate inside of the lower pressure column of air.
2. Turning the stream of air somewhat at an angle below the vertical and levitating the ball tends to be more convincing of this effect for students, as the air isn't simply pushing the ball out and away from the vacuum.
3. There really are no safety issues or clean up issues with this demonstration.