

# Flying Cups

## **Concepts Illustrated:**

The Bernoulli Effect

**Time Requirements:** 5 minutes

## **Grade Level of Audience:**

This qualitative demonstration is suited for students of all ages.

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

1. Two Styrofoam cups
2. Glue
3. Large rubber band
4. Scissors



### **II. Description of Set-up**

1. Glue two Styrofoam cups together and allow the glue to dry completely.
2. Cut the large rubber band with the scissors.
3. Tightly wrap the large rubber band around the center of the cups. Grasp the cups with one hand and stretch the loose end of the rubber band with the other hand.
4. Aim slightly upward. When you release the cups, the stretched rubber band will give the cups some spin (rotation), which results in lift.

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

1. A pitched curved ball and a dimpled golf ball are examples of how the rotation can result in Bernoulli lift when the object is also translating through the air. In this case, the relative speed of the air moving the top of the cups is greater than the relative speed of the air moving over the bottom of the cups, resulting in a net upward pressure.
2. In addition, the flying cups have built in stability due to the dihedral or upsweep of the wings.
3. Be careful not to aim this apparatus at other people.