Lab 11-3: **Angular Momentum**

Purpose: 1. To determine if Angular Momentum and/or kinetic energy are conserved in a rotational collision.

Materials: 1 Rotary Motion Sensor   1 disk   1 ring

Procedure:
1. Measure the masses of the disk and ring and record in the data table.
2. Measure the radii of the disk and ring and record in the data table.
3. Set up the Rotary Motion Sensor so that the disk is attached to it and able to rotate freely.
4. Start recording, give the disk a spin, and carefully drop the ring onto the disk. Hold it just above the disk and try to keep the centers of the ring and disk lined up.
5. Determine the angular velocity of the disk and the disk/ring by measuring the slope of the angular position vs. time graph just before and just after you dropped the ring onto the disk.

Data:

Mass of Disk: _____ kg   Mass of Ring: _____ kg

Radius of Disk: _____ m   Inner Radius of Ring: _____ m

                                                            Outer Radius of Ring: _____ m

Velocity of Disk: _____ rad/s   Velocity of Disk & Ring: _____ rad/s

Calculations:

1. What is the moment of inertia of the disk?

2. What is the moment of inertia of the ring?

3. What is the angular momentum of the disk before you dropped the ring onto it?

4. What is the kinetic energy of the disk before you dropped the ring onto it?

side 1

Lab 11-3: **Angular Momentum**

5. What is the angular momentum of the disk and ring after you dropped the ring onto it?

6. What is the kinetic energy of the disk and ring after you dropped the ring onto it?

7. What was conserved in this process? Explain why this makes sense.