

Name: _____ Section #: _____ Date: _____

Rotational Dynamics

Part 1: Varying Torque

Prediction

Consider at least two ways in which you can vary the torque applied to the spinning platform. What factors can you change? How does each change affect the applied torque? To truly see the effect these changes have on angular acceleration, what other factors must remain unchanged? Write the major points of your group discussion.

Run Part 1 of the experiment. Be sure to save a screenshot of your statistical graph with all parameters clearly visible. Have one of your group members log into their WebAssign account. Complete all required calculations there before you proceed to Part 2.

After the Experiment

How did the change in the torque affect the average value of angular acceleration? From your results, what is the relationship between torque and acceleration? Does it agree with the theory? Explain.

Part 2: Varying Rotational Inertia

Prediction

How do you think changing the distance of the rotating masses from the center of rotation will change the moment of inertia?

Would you expect the torque to change if the distance from the center of rotation to the rotating masses changed?

How do you think changing the moment of inertia of the rotating object will affect the angular acceleration in this experimental setup?

After the Experiment

Discuss if the predicted result was confirmed with the experiment. How do you make a plot of moment of inertia vs. distance from axis of rotation linear?

Data Analysis. Calculations.

Show all your work (**equations and calculations**) that you did to get the answers submitted in each part of the Inlab.

Part 1: Varying Torque

Calculate the torque produced in each run in Part 1 of the experiment.

Part 2: Varying Rotational Inertia

Calculate the moment of inertia for each position of the point masses on the rigid rod.

Have your TA sign this worksheet below and then upload it to the Inlab.

TA Signature: _____