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Using the Arduino with LabVIEW on Moment of Inertia experiment

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This paper shows the physical nature of moment of inertia. The classical experiment is done using the pulley, string, a mass holder and a set of masses. The modern experiment is based on computer controlled with LabVIEW to interface with Arduino Uno R3. The DIY photogate is made of 30mA@5V laser and light diode resistance (LDR) that two different intensity of light are used as two logical states (low and high) to measure time interval. An acrylic support is placed on a 12V high torque DC motor. The speed of the motor is controlled by a potentiometer. This experiment is designed to use the objects are aluminum sheet and cylindrical steel pipe. We found that the moment of inertia of aluminium sheet and cylindrical steel pipe (central axis) are 0.000434 and 0.000085 kg·m2. The difference between the theoretical and experimental is 12.50 % and 13.26 %, respectively.

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