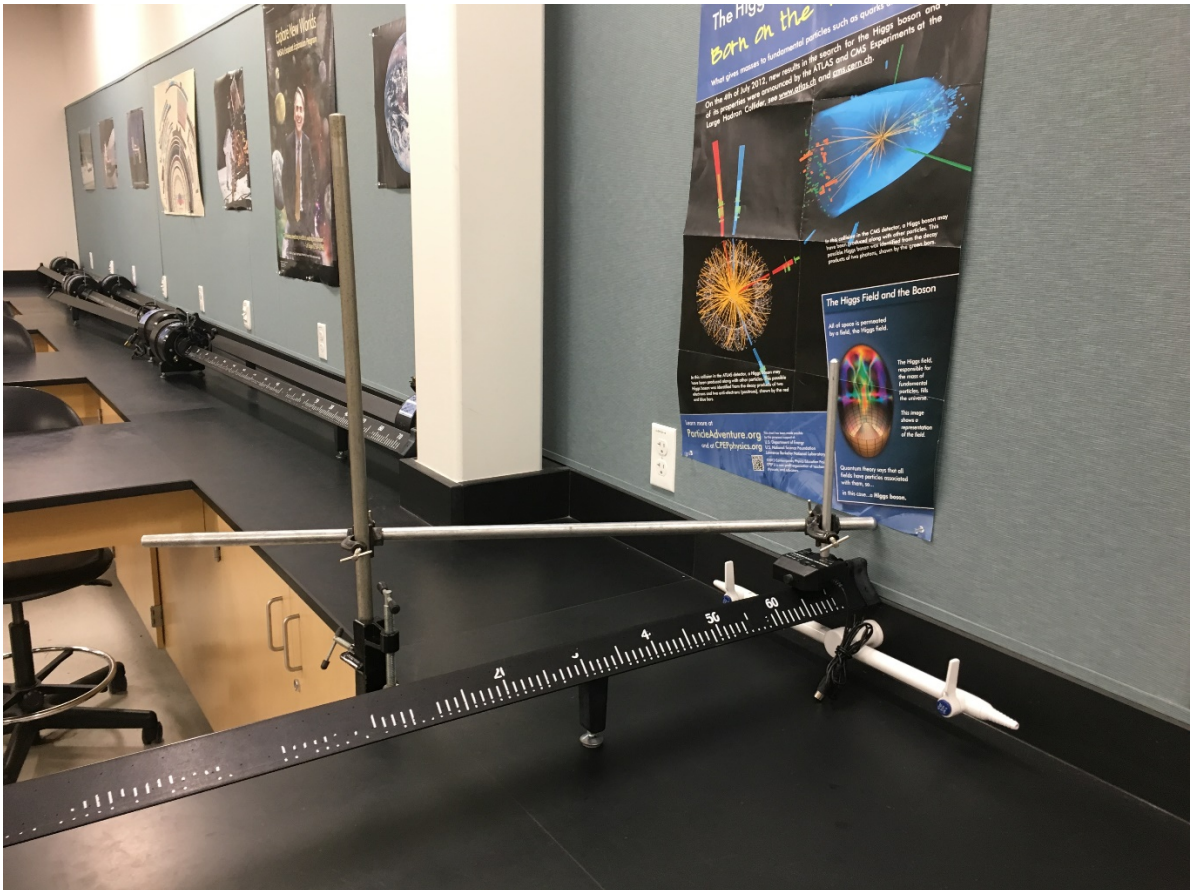


Impulse Lab Extra Notes:

Impulse

1. Setup the AirTrack on the side tables. We are not going to use the middle tables. Use the picture below to setup the force sensor for the first part of the lab: Push the carts at a **medium speed**



2. Make sure that you hold the horizontal bar so that the sensor does not move during the impact with the cart.
3. The manual tells you to setup the sample rate to 1000 Hz (1 kHz). Make sure you do that for proper data collection.
4. **Tare** the sensor using the button on the sensor.
5. **Export the data to excel and save the excel and Capstone file. Also get a snip of the force graph.** Use the ideas from the numerical analysis lab to find the area under the curve.

Stationary Impact

Close the Data studio file and start another one. Disconnect the force sensor from the interface. There are **three** parts for this section. Save the data studio file with a different name from the first one. Copy your data to your note book or excel.

1. Equal mass carts (use both big carts):

- a. Create two timers. Each timer with one photogate. Click on the green wheel to create the second time. Follow the instructions in the manual to setup the timers.
- b. You will have **two times**: One for the incoming cart and one for the outgoing cart.

2. Small mass impacting cart (coming in). Big mass impacted cart (car at rest between the gates).

- a. Add 200 grams to the big cart.
- b. Use the small cart as the impacting cart and the big cart (with extra 200 grams) as the impacted cart.
- c. The small cart should bounce back after hitting the big cart. If that does not happen add one of the hooks to the small cart. You will have to discuss if this add any error to the experiment.
- d. You will get **two** times for the impacting (small cart) cart. One coming in and the other as it bounces back. And **one** time for the impacted cart (big cart)

3. Big mass impacting (big cart with 200 grams). Small mass impacted cart (small car at rest between the gates)

- a. You do not need the hook for this part.
- b. Here there will be one time for the impacting cart through the first photogate and then another for it when it passes through the second gate. There should be only one time for the impacted cart: don't allow it to rebound!

Moving Impact

1. Equal mass carts moving towards each other.

- c. Use the two big carts no hooks.
- d. The carts will bounce from each other.
- e. Both carts will have **two** elapsed time intervals each, one for before the collision and one after.

Perfectly Inelastic Collision

1. Follow the instruction in the lab manual.