
EXPERIMENT M4

ANALYSIS OF STRAIGHT LINE MOTION WITH CONSTANT ACCELERATION

1- PURPOSE

In this laboratory exercise you will learn the kinematics of an object that is subjected to uniform acceleration.

2- EQUIPMENTS

Air table set, wooden block, millimeter ruler, millimeter graph paper and calculator.

3- EXPERIMENTAL PROCEDURE

- Operate air compressor and set the air table parallel to the ground by using its support (be sure disc doesn't move to right or left and up or down when you decontrol it). Place the data carbon sheet and the data sheet on the air table smoothly.
- Locate the wooden block to the back leg of the air table and find the slope of the air table.
- Keep the disc fixed in a corner by curling the corner of the data sheet.
- Adjust spark timer (generator) to a proper frequency or period.
- Locate the disc to the top of the air table and get the free fall data (path A). As soon as you release the disc push the spark timer (generator) pedal.
- Check out your data if it is proper.
- Give numbers to your data points 0,1,...,5 starting from first data point.
- Starting from zero point show the displacements on y – axis (use dimensioning rules). Record them into *Table 1.1*.
- Determine the time for every data points and record them into *Table 1.1*.
- Determine the acceleration of path A plotting $y - t^2$ graph.
- Compare these result with teoretical one, 980 cm/s^2 .

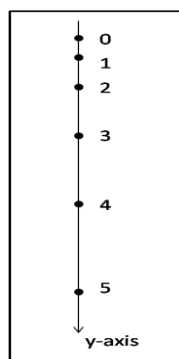


Fig. 1.1 Path A (free fall data points)

4. DATA

Draw the similar table on your data sheet and write your datas on it.

	A path		
#	$y \pm \Delta y (...)$	$t \pm \Delta t (...)$	$t^2 \pm \Delta t^2 (...)$
0			
1			
2			
3			
4			
5			

Table 1.1 Position and time data

5. Questions

1. *Analyse the motion in y- axis. Which type of motion does the disc follow?*