

## DATA TABLES FOR 151-M0 (Error Analysis)

### V-1:

**A: Edge-wise mass diameter,  $d$**  Record data on this sheet only after all students in the group have made all measurements for this section!!

Ruler measurements:  $d = \underline{4.9}$        $d = \underline{5}$        $d = \underline{5.0}$

Estimate of the size of line segment B-D: This indicates how variable locating a single edge could be.

B-D:  $\underline{3}$       B-D:  $\underline{3}$       B-D:  $\underline{3}$

### B: Flat side mass diameter, $d$

Ruler measurements:  $d = \underline{5}$        $d = \underline{5}$        $d = \underline{5}$

Estimate of the size of line segment B' -D'

B' -D' =  $\underline{5.5}$       B' -D' =  $\underline{5.5}$       B' -D' =  $\underline{5.5}$

### C: Caliper mass diameter, $d$

Caliper measurements:  $d = \underline{5}$        $d = \underline{5}$        $d = \underline{5}$

### V-2

(a)  $l = \underline{\hspace{2cm}}$        $\sigma_l = \underline{\hspace{2cm}}$       diameter of bob,  $d = \underline{\hspace{2cm}}$

(b) Record data on this sheet only after all students in the group have made all measurements for this section!!

#	Student 1	Student 2	Student 3
1	1.4	1.30	1.61
2	1.48	1.25	1.38
3	1.38	1.41	1.59
4	<b>1.33</b>	1.36	1.43
5	1.23	1.40	1.43

$l = 74$   
diameter of bob = 2.5  
string  
length of bob and string = 76.5

V-3

$$x_o = \frac{69.1}{\text{Position 1}} \quad x_o = \frac{68.5}{\text{Position 2}} \quad x_o = \frac{68.3}{\text{Position 3}} \quad \sigma_{x_o}(\text{position 2}) = \underline{\hspace{1cm}.5}$$

#	$m(\text{gm})$	$x_M(\text{cm})$	$x_M(\text{cm})$	$x_M(\text{cm})$
1	20.0	<b>65.5</b>	65.5	65.5
2	40.0	61.8	62.5	62.2
3	60.0	57.9	59	58.4
4	80.0	54.3	55.5	54.7
5	100.0	50.4	51.5	50.8
6	120.0	46.6	46.2	46.4

Each student should measure  $x_M$  at each value of  $m$  with their eye in position 2 (see Fig M0-6.)