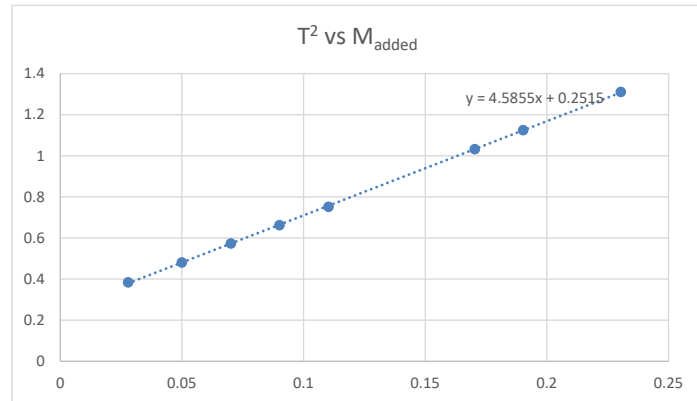


Homework 4 (Sp. 19)

1

MWJ Spring

T1 50 cycles	T2 50 cycles	Period(s)	T ² (s ²)	kg M _{added}
31.02	30.96	0.6198	0.384	0.0279
34.66	34.68	0.6934	0.481	0.05
37.8	37.89	0.7569	0.573	0.0701
40.71	40.68	0.8139	0.662	0.0901
43.44	43.28	0.8672	0.752	0.1103
50.82	50.8	1.0162	1.033	0.1704
52.97	53.1	1.0607	1.125	0.1903
57.26	57.21	1.1447	1.310	0.2304



k =	8.609	N/m
σ_k =	0.031	N/m
M _s =	0.1646	kg
σ_m =	0.0016	kg

$k = 4\pi^2/\text{slope}$
 $\sigma/k = \text{Std Error/slope}$

$M_s = \text{Int} * 3k / (4\pi^2)$

SUMMARY OUTPUT

Static k =	8.407	N/m
s =	0.031	N/m

Regression Statistics	
Multiple R	0.99996
R Square	0.99992
Adjusted R Sc	0.999907
Standard Errc	0.003192
Observations	8

ANOVA					
	df	SS	MS	F	ignificance F
Regression	1	0.76702	0.76702	75301.9	1.58E-13
Residual	6	6.11E-05	1.02E-05		
Total	7	0.767081			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	ower 95.0%	pper 95.0%
Intercept	0.251543	0.002264	111.1207	3.58E-11	0.246004	0.257082	0.246004	0.257082
X Variable 1	4.585488	0.01671	274.4119	1.58E-13	4.544599	4.626376	4.544599	4.626376

2

h =	2.000	cm
r =	2.000	cm
Vol =	25.13	cm ³

s _h =	0.010	cm
s _r =	0.005	cm
s _{Vol} =	0.18	cm ³

$V = \pi r^2 h$, So $(s_V/V)^2 = (s_h/h)^2 + (2s_r/r)^2$

$\rho = M/V$, So $(s_\rho/\rho)^2 = (s_M/M)^2 + (s_V/V)^2$

M =	200	g
Density =	7.958	g/cm ³
s _{density} =	0.057	g/cm ³

s _m =	0.20	g
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