Dynamics of Rotational Motion

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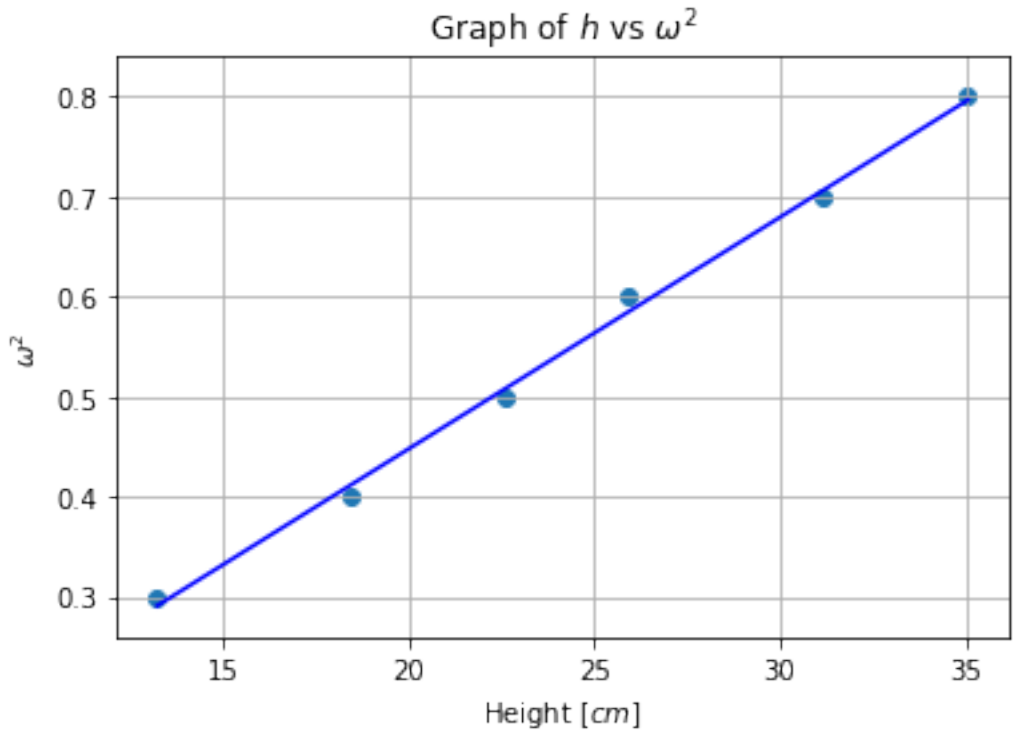
0.1 Part 2

[17]:

	Height	$\bar{t}$	T	ω^2
0	30	0.216100	1.7288	13.209009
1	40	0.183000	1.4640	18.419489
2	50	0.165150	1.3212	22.616355
3	60	0.154300	1.2344	25.908837
4	70	0.140675	1.1254	31.170654
5	80	0.132650	1.0612	35.056234

Table of h vs ω^2 for $m = 30g$



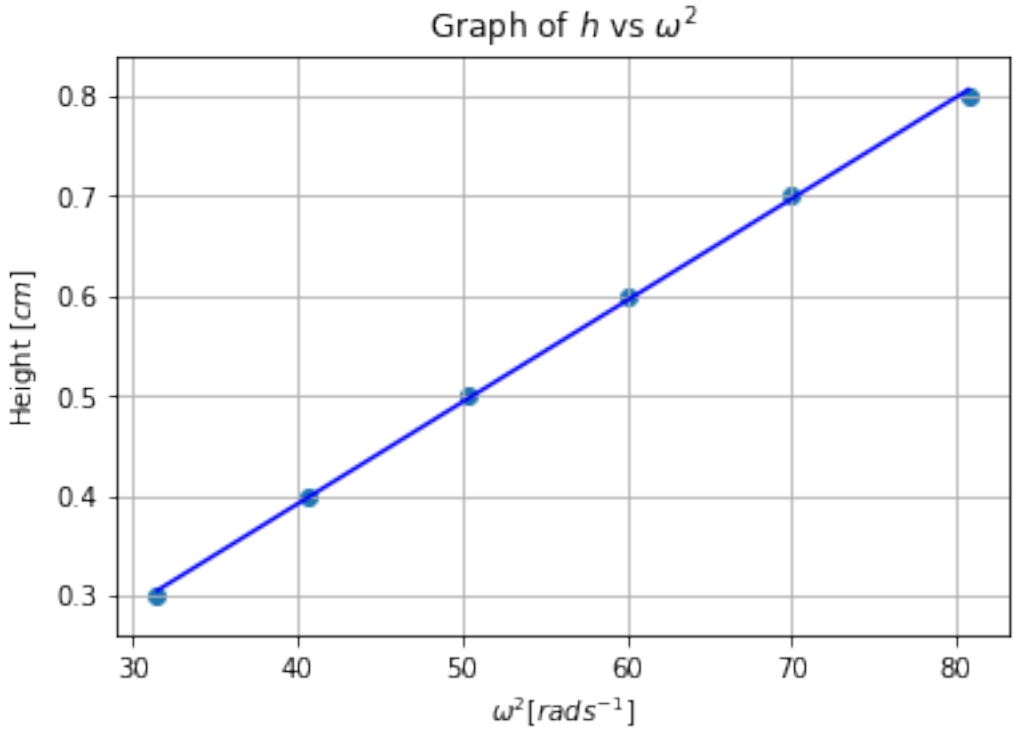
R^2 = 0.9967145034156386

$f(x) = 0.02313604038636388x - 0.01444448971893475$

$I = 0.0136\ kgm^2$

[4]:

| Height $[cm]$ $\bar{t}$ $[s]$ T $[s]$ ω^2 0 30 0.140000 1.1200 31.471953 1 40 0.123250 0.9860 40.607468 2 50 0.110675 0.8854 50.3



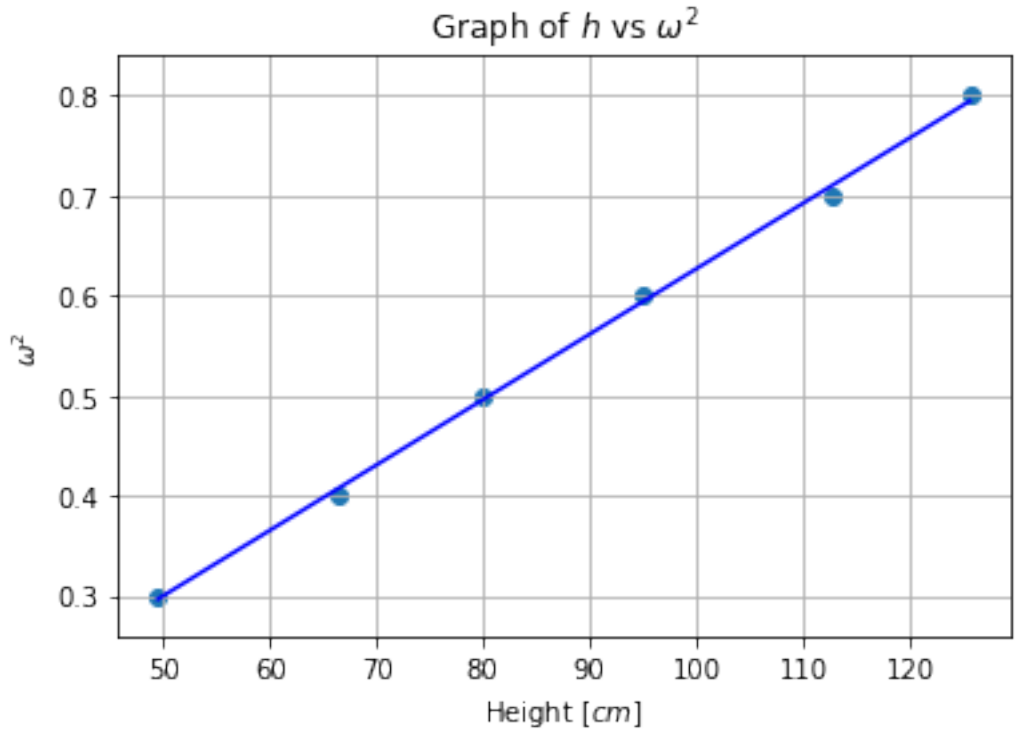
$R^2 = 0.9994260034678575$

$f(x) = 0.010161405884977744x - 0.014454159936804989$

$I = 0.0119\ kgm^2$

[6]:

Height $[cm]$ $\bar{t}[s]$ T $[s]$ ω^2 0 30 0.111600 0.8928 49.528066 1 40 0.096350 0.7708 66.447145 2 50 0.087800 0.7024 80.018560 3 60 0.080625 0.6450 94.894340 4 70 0.073950 0.5916 112.798521 5 80 0.070075 0.5606 125.618485



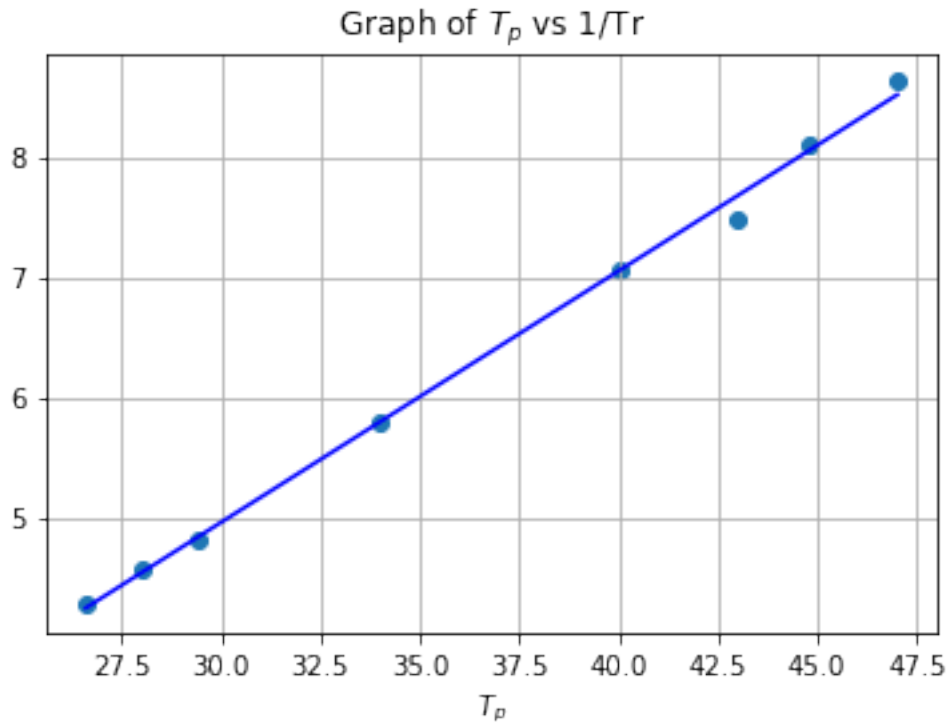
$R^2 = 0.9984834259758607$

$f(x) = 0.006539688827993439x - 0.026915126144064994$

$I = 0.0115\ kgm^2$

0.2 Part 4

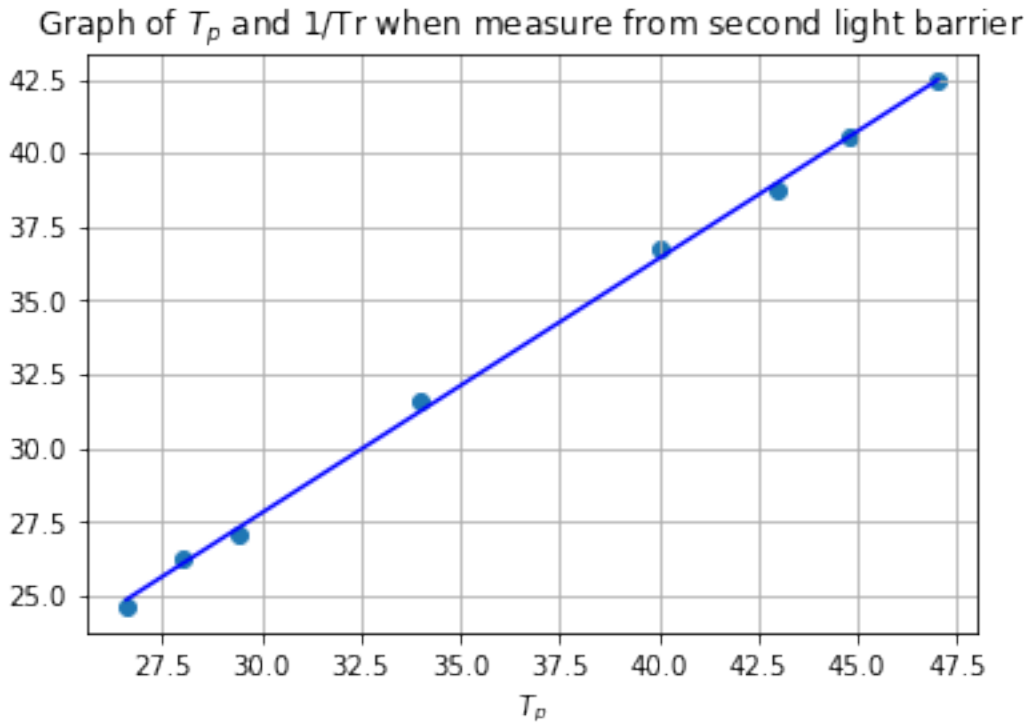
[9]:



$R^2 = 0.997336044683989$

$f(x) = 0.20962434609630795x - 1.3244636934185197$

$I = 0.0062$



$R^2 = 0.9987049833658189$

$f(x) = 0.8628134862229484x1.9179656204934474$

$I = 0.0015\ kgm^2$

0.3 Part 5

0.4 Error Analysis

`(2.46+/-0.12)e-08 (2.48+/-0.13)e-08 (6.9+/-0.7)e-12`