

# Auswertung: Gravitationswaage 2018-01-15

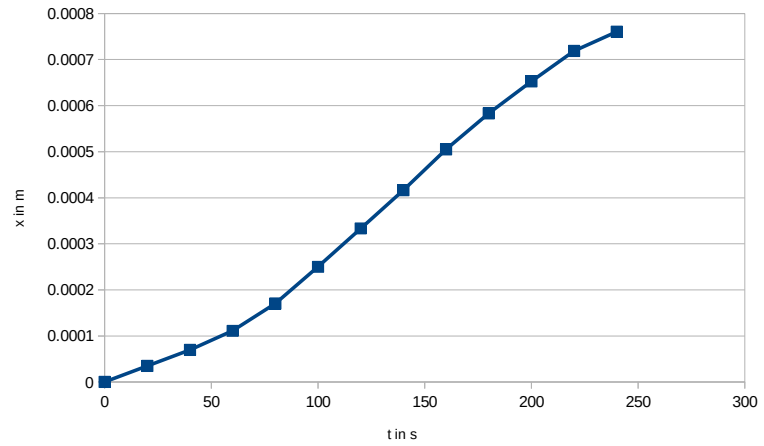
<b>Gegeben:</b>	L =	7.2 m	
	R =	4.70E-02 m	= 4.7 cm
	r =	5.00E-02 m	= 5 cm
	M =	1.5 kg	
	m =	1.50E-02 kg	= 15 g

<b>Messung:</b>														
t in s	0	20	40	60	80	100	120	140	160	180	200	220	240	
S in cm	0	1	2	3.2	4.9	7.2	9.6	12	14.55	16.8	18.8	20.7	21.9	
S in m	0	0.01	0.02	0.032	0.049	0.072	0.096	0.12	0.1455	0.168	0.188	0.207	0.219	
t <sup>2</sup> in s <sup>2</sup>	0.00	400.00	1600.00	3600.00	6400.00	10000.00	14400.00	19600.00	25600.00	32400.00	40000.00	48400.00	57600.00	
x in m	0	3.47E-05	6.94E-05	1.11E-04	1.70E-04	2.50E-04	3.33E-04	4.17E-04	5.05E-04	5.83E-04	6.53E-04	7.19E-04	7.60E-04	

**G offiziell:** 6.67408E-11  $6,67408 \cdot 10^{-11} \frac{m^3}{kg \cdot s^2}$

**G aus Messung:**  
 a/2 aus Geradensteigung  
 $a/2 = x/t^2 = 2.22E-08$   
 $\implies a = 4.4345E-08$   
 $\implies G = a \cdot R^2 / M = 6.5305E-11$   
 relativer Fehler: 2%

t-x-Diagramm



t<sup>2</sup>-x-Diagramm

