

Messung	Zeit [ms] = t_m
1	986,7
2	987,8
3	987,0
4	988,2
5	989,2

$$s = c \cdot t^2$$

$$a = 2c \Rightarrow c = \frac{a}{2}$$

$$s = \frac{1}{2} a t^2$$

$$v = a \cdot t$$

$$a = a$$

Messwert: $987,8 \pm 1,0 \text{ ms}$

Erdbeschleunigung $a = g$ (gravity)

$$s(t) = \frac{1}{2} g t^2 + s_0$$

$$s_0 = 4,78 \text{ m}$$

$$s(t) = s_0 - \frac{1}{2} g t^2$$

$$0 = s(t_m) = 4,78 \text{ m} - \frac{1}{2} g t_m^2$$

$$\frac{1}{2} g t_m^2 = 4,78 \text{ m} \quad | \cdot 2$$

$$g \cdot t_m^2 = 2 \cdot 4,78 \text{ m}$$

$$g = \frac{2 \cdot 4,78 \text{ m}}{t_m^2} = 9,798 \frac{\text{m}}{\text{s}^2} \pm \dots$$

$$= \frac{2 \cdot 4,78 \text{ m}}{(0,9875)^2} = 9,798 \frac{\text{m}}{\text{s}^2} \pm \dots$$

$$s = \frac{1}{2} g t^2$$

$$s(1\text{s}) = \frac{1}{2} g \cdot 1 \text{ m}$$

$$s(2\text{s}) = \frac{1}{2} g \cdot 4 \text{ m}$$

$$s(3\text{s}) = \frac{1}{2} g \cdot 9 \text{ m}$$

$$s(4\text{s}) = \frac{1}{2} g \cdot 16 \text{ m}$$