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An introduction to data analysis in Python.

4.4 The y-intercept is not significatly different from zero.
Intercept: 190. ±107 Gradient: 63.60 ±0.60

Figure at the end of the log.

5. It looks like an exponential decay, proper to use exponential relationship.

5.1 ~~a_fitted = 926.42~~ a_fitted: 926 ±48
~~b_fitted = 0.58076~~ b_fitted: 0.58 ±0.07
~~c_fitted = 264.01~~ c_fitted: 264.01 ±5668
Half of original: 926/2 + 264.01 = 727.01 ⇒ t = 1.20s
By measuring and calculating via python, we can notice there is about 264 background signal.

5.2 ~~Intercept : 1084.0 Error : ± 0.3~~
~~Slope : -262.6 Error : ± 0.2~~
~~$\Rightarrow A = e^{intercept} =$~~

5.2 Intercept : 6.834 Error : ± 0.255
Slope : -0.59 Error : ± 0.17.
$\Rightarrow A = e^{6.834} = 928.9 \pm 269.8 \simeq a_fitted$
Slope ~~Intercept~~ $\simeq$ b_fitted = 0.58 ± -.
Thus they fit the same, consistence exist.

6.1 $Ax^2 + Bx + C$
~~$A = 0.57 \pm 0.02$~~
~~$B = 1.20 \pm 0.39$~~
$C = -4.97 \pm 1.79$
$A = 569000 \pm 18000$
$B = 1200 \pm 390$
$C = -4.97 \pm 1.79$
B and C are relatively small comparing to A.
Thus this is consistent.
We shouldn't set to zero for interception since C has no error ~~tat~~ larger than itself value.
$A = \frac{1}{2D}g \Rightarrow D = \frac{1}{2A}g = 8.62 \times 10^{-6} \pm 0.27 \times 10^{-6}$

Summery:

This lab teaches me how to deal with data and using Matplotlib & pandas (input data) & curve_fit (fit data).
Nice experience but with unfornate ~~abo~~ many bugs in the programme.