Vega Hitti

260 381 396

PHYS 512 – Assignment 4

Question 2:

For question 2, I used the Levenberg-Marquardt method to estimate the best-fit parameters. This yielded the following parameters:

$$68.4955561$$

$$0.0224189493$$

$$0.116905708$$

$$7.55198229 \cdot 10^{-3}$$

$$1.89729855 \cdot 10^{-9}$$

$$0.972141191$$

The errors on the above parameters are:

$$0.0139406724$$

$$8.40185631 \cdot 10^{-6}$$

$$2.62517409 \cdot 10^{-5}$$

$$6.03138512 \cdot 10^{-5}$$

$$2.28801801 \cdot 10^{-13}$$

$$1.51423932 \cdot 10^{-4}$$

The X^2 value of this fit is 2584.6034, with a p-value of 0.1193. Obviously, this fit is much better than the fit from question 1 (where the p-value was $1.149 \cdot 10^{-23}$). Since $p = 0.11193 > 0.05$, we deem this an acceptable fit. Indeed, the plot below seems to agree with this statement.

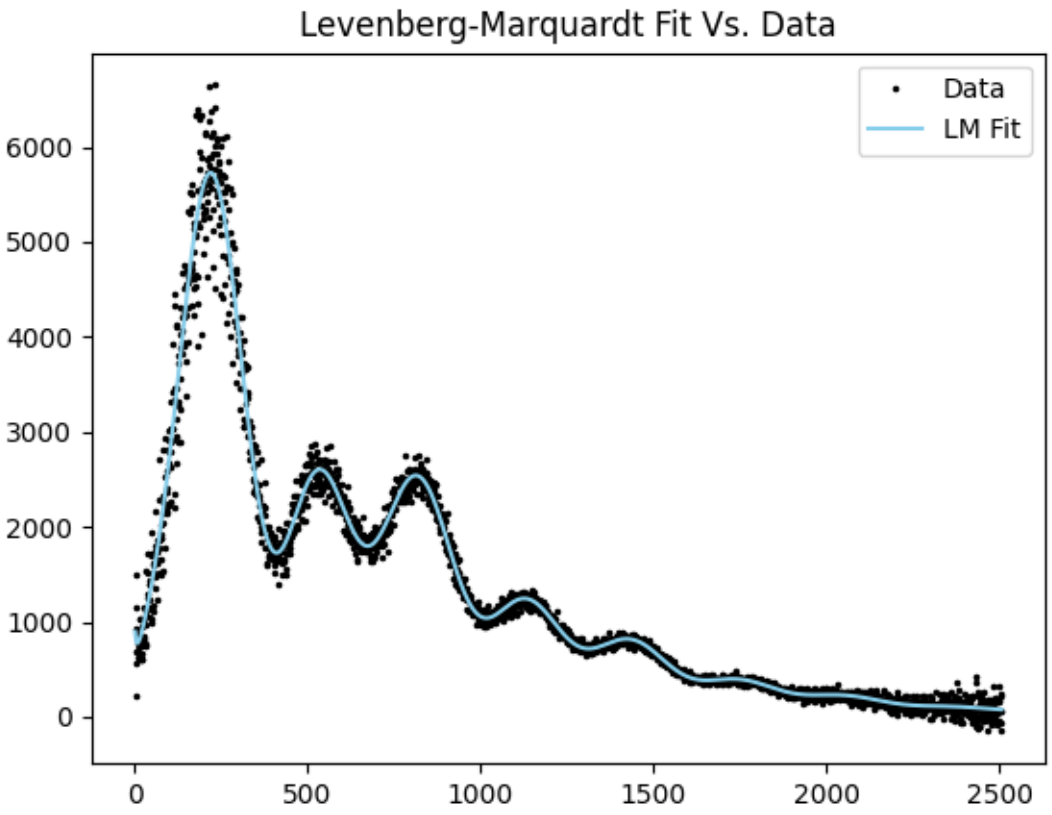

Figure 1: Plot of the Levenberg-Marquardt Fit vs. Our Data