Homework 11 - Physics 240
System of Spring and Matrix Inversion

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1 Introduction

Similar to the previous homework, this is a continuation with polynomial fitting for the data. With the same set of mock data, now I apply polynomial fitting and I got this plot.

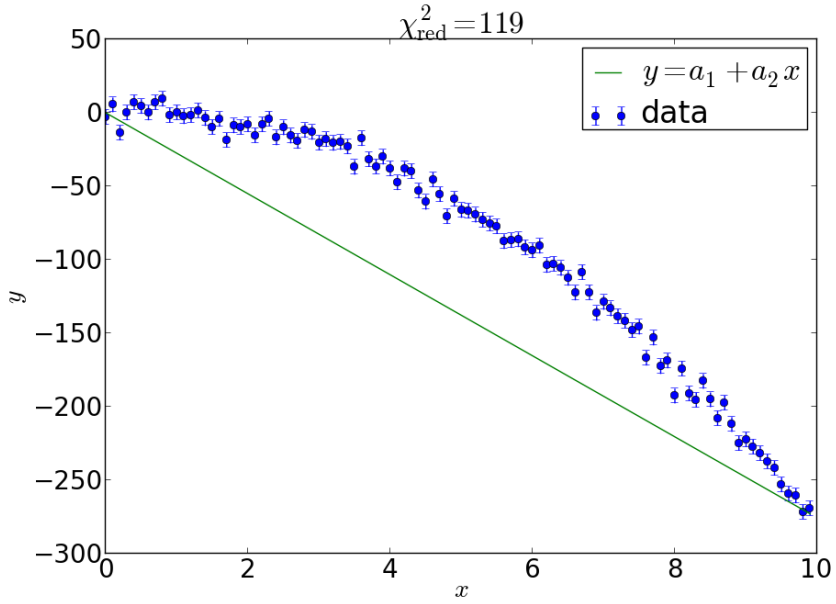

Figure 1: Polynomial fit with 2 paramaters

The χ^2_{red} value is not the same as with the linear fit, this could be because the mock data set is different for the polynomial fit. Other than that I have no other explaination.
With the 3 parameters, I get the following plot.

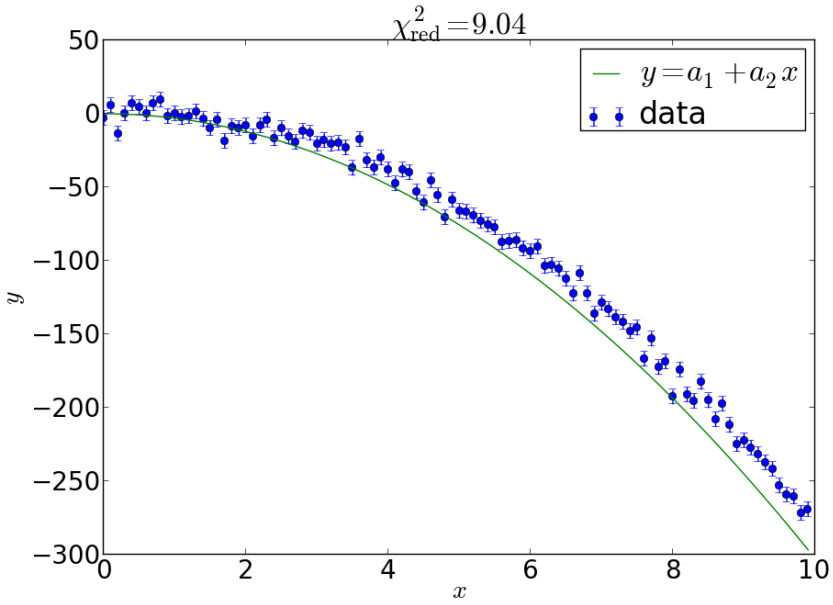

Figure 2: Power-law fit of Global Temperature vs time

This shows that the code works for the mock data set with 3 parameters.

2 Discussion and data

I got my data from NASA giss, specifically the Global annual mean surface air temperature change vs time. After fitting the data, I got the following outputs

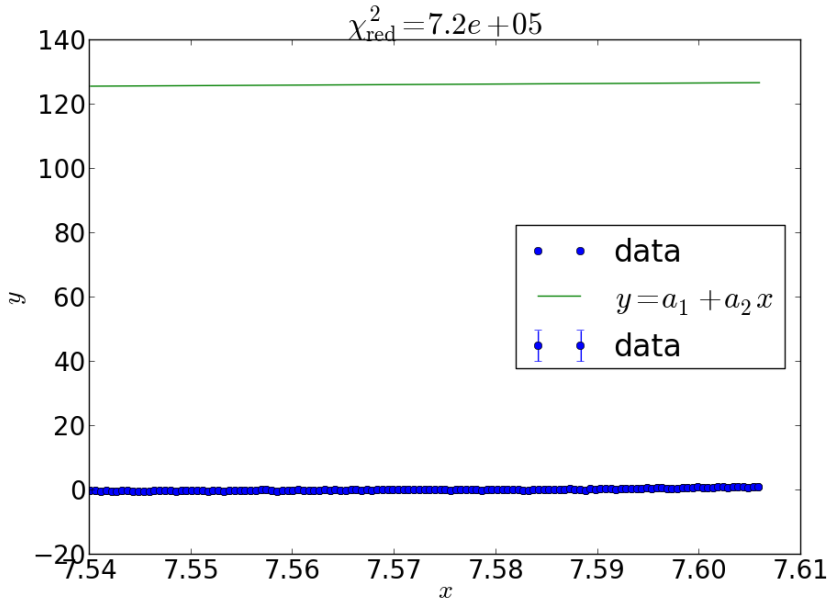

Figure 3: Polynomial fit of Global Temperature vs time 2 parameters

This is to test the polynomial fit with my data for 2 parameters, and I have no idea why my data can't get a good fit with polynomial, all the numbers seem to be very high. I'm guessing it's because the data is less than 1 and some are negative. The 3 parameters fit also gives a similar plot with no improvements.

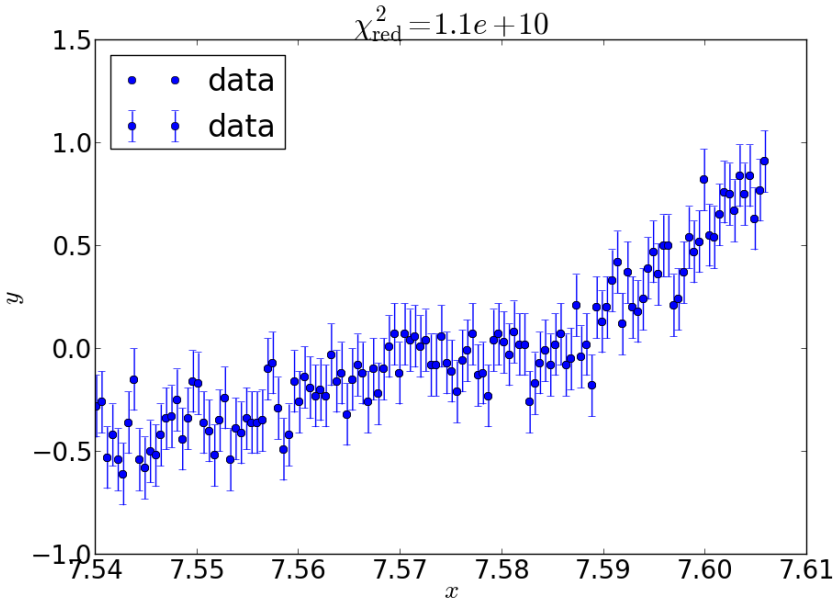

Figure 4: Global Temperature vs time

This is the data set that I got, and I reckon the polynomial should have no trouble fitting this set, but then I'm not sure why the fit works for the mock data and not my data set.

* I didn't have time to complete the contour plot because I into some trouble with the array.