

exponentials

September 29, 2024

Exercises fitting exponential decay data

```
[17]: import numpy as np
import matplotlib.pyplot as plt
from matplotlib import gridspec
%matplotlib inline
from scipy.optimize import curve_fit
import os

basedir = '/home/david/gh/intro_curve_fitting_python'

try:
    os.chdir(basedir)
except:
    print('\n\nproblem changing to the directory you specified; does it exist?
    ↪\nthe kernel will now restart; rerun this program.\n\n')
    quit()
```

In the ‘.../intro_curve_fitting_python/exponential_data’ directory you will find the following files:

```
[18]: filenames = os.listdir(basedir+'/exponential_data/')
filenames
```

```
[18]: ['exponential2.csv', 'exponential3.csv', 'exponential11.csv']
```

It should not be too difficult to adapt your work from the linear fitting exercises to these data sets. To get you started, I will define an appropriate fitting function:

$$f(x) = c + A_0 e^{kx}$$

with $k < 0$ assumed.

Note that you will have to customize this function to fit data set 3. If you get stuck with that, check out the [notebook](#) with which I created the data, or view it as a [webpage](#).

```
[19]: def genexpfunc(x, a, k, c):
return c+a*np.exp(k*x)
```

Your work here:

```
[ ]:
```

Non-trivial curve-fitting: thermal denaturations Click [here](#).

[]: