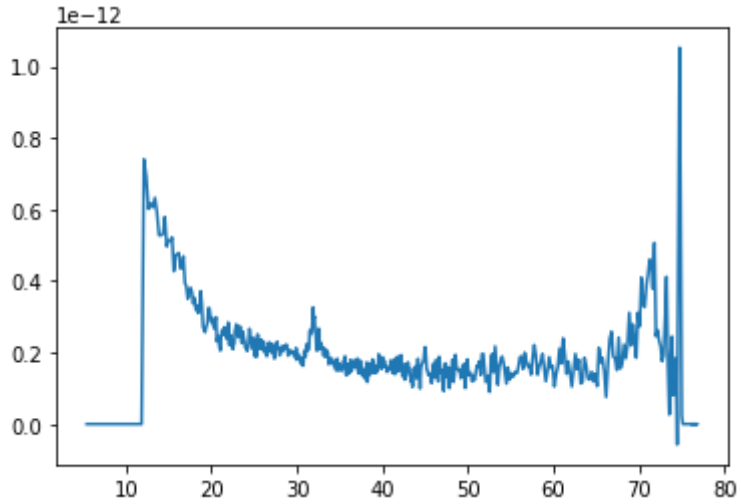
```
from astropy.io import fits as pyfits
#import numpy as np

#the data is taken from https://fits.gsfc.nasa.gov/fits_samples.html
#We're using the FITS called IUE LWP  (spectrum contained in vector columns of a binary table.)
#Each of the sample spectra on this site seem to have different formats.

hdulist = pyfits.open( "IUE.fits" )

# we have 2 HDUs
# The spectral data would seem to be the second HDU
# pretty print its header
print(repr(hdulist[1].header))

# print column information
print(hdulist[1].columns)

spectra = hdulist[1].data

# The column names in spectra are
# APERTUTE, NPOINTS, WAVELENGTH, DELTAW,
# NET. BACKGROUND,SIGMA, QUALTIY, FLUX
# The last 5 have 640 values.

net = spectra[0][5]
flux = spectra[0][8]

# To plot using maptplotlib:
import matplotlib.pyplot as plt
plt.plot(net, flux)
plt.show() # this gives something that looks like a spectra.
#Presumaby we have to allow fpr BACKGROUND ?
#Why is the x-axis column called NET?
#Have I even picked the correct columns to plot?
```

```
In [8]: runfile('C:/Users/jerem/Dropbox/UCLan/python/FitsSpectra.py', wdir='C:/
Users/jerem/Dropbox/UCLan/python')
XTENSION= 'BINTABLE'           / Table Extension
BITPIX  =                    8 / Binary data
NAXIS   =                    2 / Two_dimensional table array
NAXIS1  =                11535 / Bytes per row (15+18*NPOINTS)
NAXIS2  =                    1 / Number of apertures (1-single, 2-both)
PCOUNT  =                    0 / Number of bytes following data matrix
GCOUNT  =                    1 / Only one group
TFIELDS =                    9 / Number of columns in the table
TFORM1  = '5A      '           / Count and data type of field 1
TTYPE1  = 'APERTURE'           / Aperture type (large or small)
TUNIT1  = '        '           / Unitless
TFORM2  = '1I      '           / Field 2 has one 2-byte integer
TTYPE2  = 'NPOINTS '           / Number of points
TUNIT2  = '        '           / Unitless
TFORM3  = '1E      '           / Count and data type of field 3
TTYPE3  = 'WAVELENGTH'         / 3rd field is starting wavelength
TUNIT3  = 'ANGSTROM'           / Unit is angstrom
TFORM4  = '1E      '           / Count and data type of field 4
TTYPE4  = 'DELTAW  '           / 4th field is wavelength increment
TUNIT4  = 'ANGSTROM'           / Unit is angstrom
TFORM5  = '640E    '           / Count and data type of field 5
TTYPE5  = 'NET     '           / 5th field is net flux array
TUNIT5  = 'FN      '           / Unit is IUE FN
TFORM6  = '640E    '           / Count and data type of field 6
TTYPE6  = 'BACKGROUND'         / 6th field is background flux array
TUNIT6  = 'FN      '           / Units IUE FN
TFORM7  = '640E    '           / Count and data type of field 7
TTYPE7  = 'SIGMA   '           / 7th field is the sigma
TUNIT7  = 'ERG/CM2/S/A'        / Unit is erg/cm2/sec/angstrom
TFORM8  = '640I    '           / Count and data type of field 8
TTYPE8  = 'QUALITY '           / 8th field is the data quality flag
TUNIT8  = '        '           / Unitless
TFORM9  = '640E    '           / Count and data type of field 9
TTYPE9  = 'FLUX    '           / 9th field is the calibrated flux
TUNIT9  = 'ERG/CM2/S/A'        / Unit is erg/cm2/sec/angstrom
FILENAME= 'LWP25637.MXLO'      / Filename (camera)(number).MXLO
EXTNAME = 'MELO    '           / Name of table
ColDefs(
    name = 'APERTURE'; format = '5A'
    name = 'NPOINTS'; format = '1I'
    name = 'WAVELENGTH'; format = '1E'; unit = 'ANGSTROM'
    name = 'DELTAW'; format = '1E'; unit = 'ANGSTROM'
    name = 'NET'; format = '640E'; unit = 'FN'
    name = 'BACKGROUND'; format = '640E'; unit = 'FN'
    name = 'SIGMA'; format = '640E'; unit = 'ERG/CM2/S/A'
    name = 'QUALITY'; format = '640I'
    name = 'FLUX'; format = '640E'; unit = 'ERG/CM2/S/A'
)
```



In [9]: