1. gaussianFinal.ipynb

Performs a gaussian fit for every pixel in a molecular .fits file.

Input:

- .fits file for a molecule

Output:

- .txt file of gaussian fits data
  - pixel numbers, galactic coordinates, TA, Tmb, vlsr, sigma and fwhm

Example file names:

's138_HCO+_smo.fits' # input fits file name for molecule A
‘s138_HCO+_gaussfits.txt' # output of Gaussian fits of molecule A
‘s138_HCN_smo.fits' # input fits file name for molecule B
's138_HCN_gaussfits.txt' # output of Gaussian fits of molecule B

2. columndensityFinal.ipynb

Using the gaussian fit data, Radex is run to determine the column density of each pixel.

Input:

- .fits file of a temperature map
- .inp radex input file
  - See https://personal.sron.nl/~vdtak/radex/index.shtml#moldata for specifications

Output:

- .txt file of kinetic temperature for eachpixel
  - pixel numbers, galactic coordinates, Tk
- .out radex output file
- .txt file of all the column densities for each pixel
  - pixel numbers, galactic coordinates, Tk, Tmb, vlsr, fwhm, column density

Example file names:

‘s138_temp_regrid.fits’ # input fits file of a temperature map fit to match HCN and HCO+ pixels
‘s138_temp_regrid.txt’ # output text file of kinetic temperature of each pixel
‘radexHCO+.inp’ # input rades file
‘radexHCO+.out’ # output rades file
‘columnDenHCO+.txt’ # output text file of column density

3. densityratioFinal.ipynb

Input:

- .txt file of column densities

Output:

- Plot of (HCN)/(HCO+) column density ratio

Example file names:
‘columnDenHCO+.txt’ # input text file of column density