

Sky Map

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In [178... # Imports
import math
import matplotlib.pyplot as plt
import pandas as pd
import re
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```
In [179... # Read data file
df = pd.read_csv("Data/bsc5.csv")
df
```

```
Out[179]:
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	HR	Name	DM	HD	SAO	FK5	IRflag	r_IRflag	Multiple	ADS	...	R
0	1	NaN	BD+44 4550	3.0	36042.0	NaN	NaN	NaN	NaN	46.0	...	
1	2	NaN	BD-01 4525	6.0	128569.0	NaN	NaN	NaN	NaN	NaN	...	
2	3	33 Psc	BD-06 6357	28.0	128572.0	1002.0	I	NaN	NaN	NaN	...	
3	4	86 Peg	BD+12 5063	87.0	91701.0	2004.0	NaN	NaN	NaN	NaN	...	
4	5	NaN	BD+57 2865	123.0	21085.0	NaN	NaN	NaN	NaN	61.0	...	
...	
9105	9106	NaN	CP-73 2346	225233.0	255629.0	NaN	NaN	NaN	NaN	NaN	...	
9106	9107	NaN	BD+33 4828	225239.0	53622.0	2002.0	NaN	NaN	NaN	NaN	...	
9107	9108	NaN	CP-72 2800	225253.0	255631.0	1001.0	NaN	NaN	NaN	NaN	...	
9108	9109	NaN	BD+25 5068	225276.0	73731.0	NaN	I	NaN	NaN	42.0	...	
9109	9110	NaN	BD+60 2667	225289.0	10962.0	NaN	NaN	NaN	NaN	NaN	...	

9110 rows × 53 columns

```
In [180... # Convert RA to numbers and drop all NaN values
df['RAh'] = pd.to_numeric(df['RAh'], errors='coerce').dropna()
df['RAm'] = pd.to_numeric(df['RAm'], errors='coerce').dropna()
df['RA_s'] = pd.to_numeric(df['RA_s'], errors='coerce').dropna()
```

```
In [181... # Convert DE to numbers and drop all NaN values
df['DEd'] = pd.to_numeric(df['DEd'], errors='coerce').dropna()
df['DEm'] = pd.to_numeric(df['DEm'], errors='coerce').dropna()
df['DEs'] = pd.to_numeric(df['DEs'], errors='coerce').dropna()
df = df.dropna(subset=['DE'])
```

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In [182... # Reset the indices for everything in the DataFrame so we don't get indexing errors l
df = df.reset_index()
```

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In [183... # Append RA to a list for coordinates
RA = []
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for i in range(len(df['RAh'])):
    RA.append(15 * (df['RAh'][i] + (df['RAm'][i] / 60) + (df['RAs'][i] / 3600)))
```

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In [184... # Make a list of the DE signs
DE_signs = []
for i in df['DE']:
    DE_signs.append(i)

# Append DE to a list for coordinates
DE = []
for i in range(len(df['DE'])):
    DE.append(df['DEd'][i] + df['DEm'][i] / 60 + df['DEs'][i] / 3600)

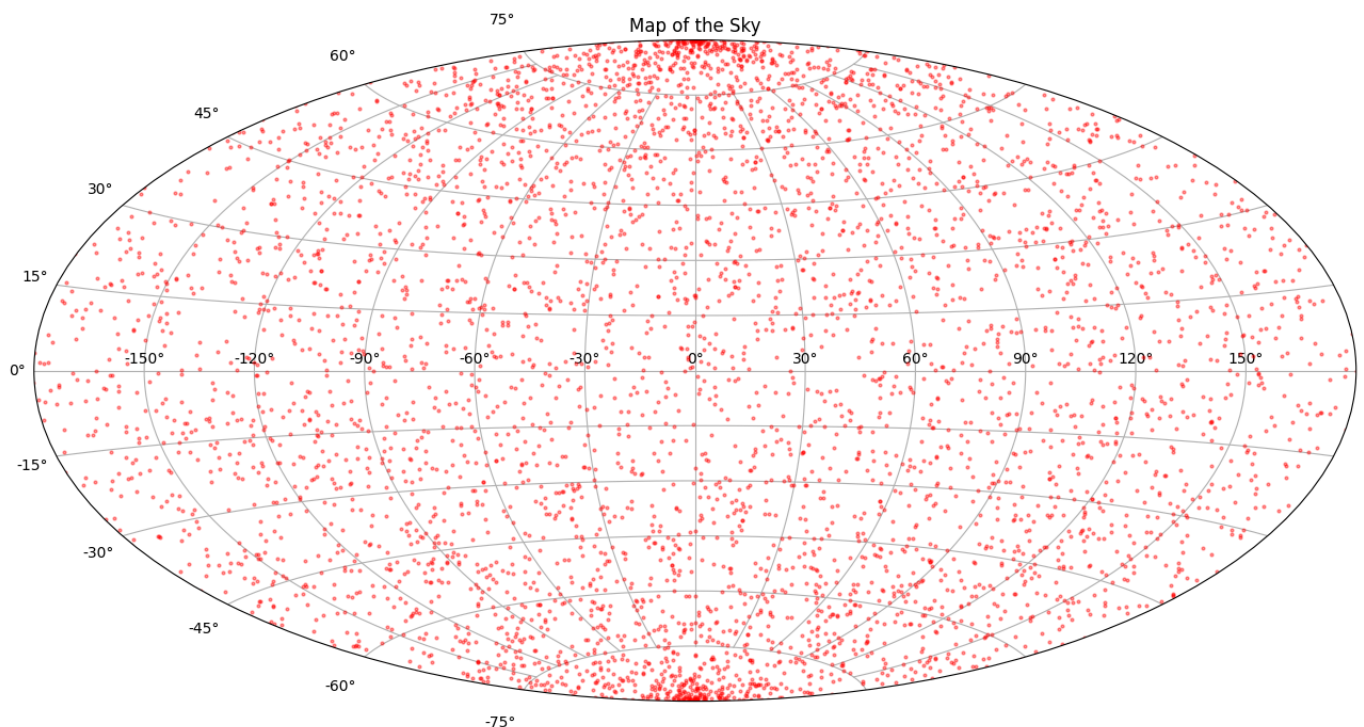
# Get all the signs for DE right
for i in range(len(DE_signs)):
    DE[i] *= float(re.sub(r'\n[0-9]?', '', str(DE_signs[i]))) + "1")
```

```
In [185... # Convert Galactic Longitude and Galactic Latitude to numbers and drop all NaN values
df['GLON'] = pd.to_numeric(df['GLON'], errors='coerce').dropna()
df['GLAT'] = pd.to_numeric(df['GLAT'], errors='coerce').dropna()
```

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In [186... # Make a list for the coordinates for each
long = []
for num in df['GLON']:
    long.append(num)

lat = []
for num in df['GLAT']:
    lat.append(num)
```

```
In [187... # Plot the equatorial coordinates
plt.figure(figsize = (16, 8.4))
plt.subplot(projection = "aitoff")
plt.title("Map of the Sky")
plt.plot(RA, DE, 'o', markersize = 2, alpha = 0.4, color = 'r')
plt.grid(True)
plt.show()
```



```
In [188... # Plot the galactic coordinates
plt.figure(figsize = (16, 8.4))
plt.subplot(projection = "aitoff")
plt.title("Map of the Sky")
```

```
plt.plot(long, lat, 'o', markersize = 2, alpha = 0.4, color = 'r')  
plt.grid(True)  
plt.show()
```

