Reading and Writing data in Python

ASCII

- American Standard Code for Information Interchange
- Can use text file

```
In [1]: f = file(‘data.txt’,’w’)

In [2]: f.write('This is my data.’)

In [3]: f.close()
```

```
In [1]: x = linspace(-0.9,0.9,100)
In [2]: y = x**6 - x**4 + 0.2*x**2
In [3]: f = file('data.txt','w')
In [4]: f.write('#This is my data.\n')
In [5]: for i in range(len(x)):
   ....:     f.write('%f \t %f \n'%(x[i], y[i]))
In [6]: f.close()
```

```
In [1]: data = np.loadtxt('data.txt')
In [2]: x = data[:,0]
In [3]: y = data[:,1]
```

Binary File

- Keeps full information
- .npy format
- .hdf5 format

```
In [1]:data_array = np.vstack((x,y))
In [2]: np.save('my_data',data_array)


In [1]:data = np.load('my_data.npy')
```

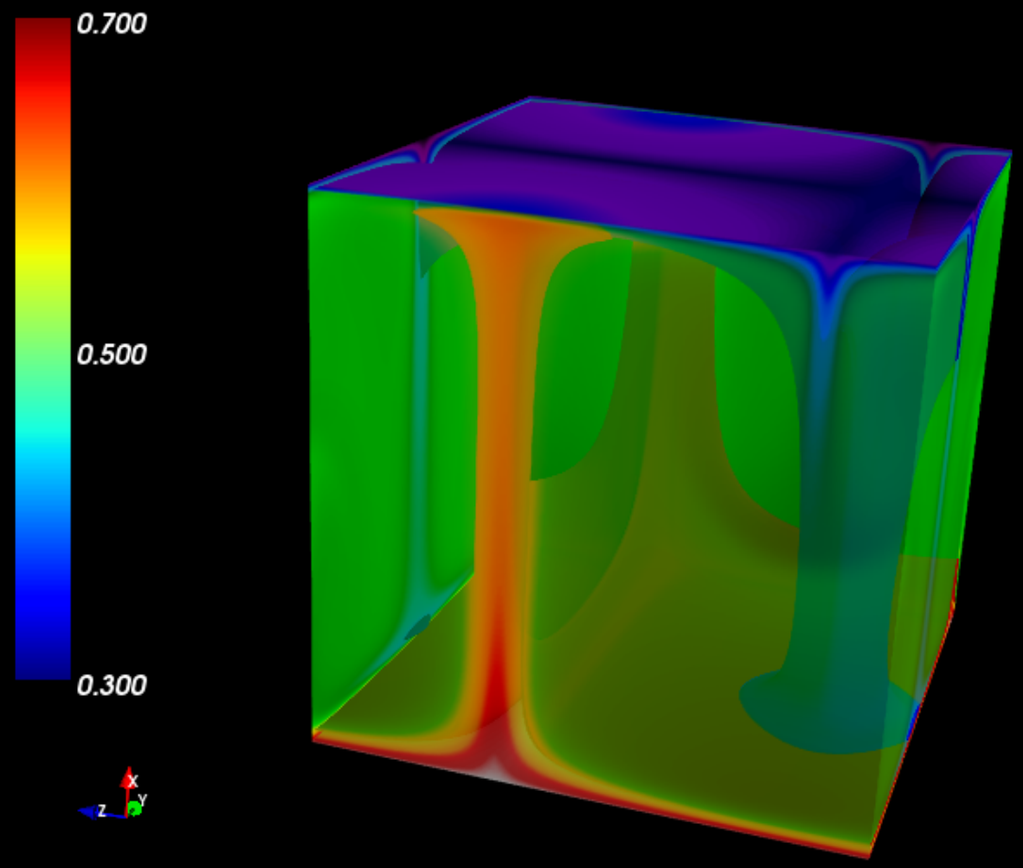
HDF5

```
In [1]: write_file = h5py.File('data_set.h5')
In [2]: write_file['data_1'] = data_array
In [3]: write_file.close()
```

```
In [1]: read_file = h5py.File('data_set.h5')
In [2]: data = read_file[‘/data_1']
In [3]: data = np.array(data)
In [4]: write_file.close()
```

Visualisation

Mayavi



```
maya.figure(bgcolor=(0, 0, 0),size=(800, 600))
maya.contour3d(T, colormap=‘jet')
src = maya.pipeline.scalar_field(T)
maya.pipeline.surface(src, colormap=‘spectral',opacity=0.7)
maya.colorbar(orientation='vertical', nb_labels=3)
maya.show()
```

Important links

- http://docs.scipy.org/doc/numpy-1.10.0/reference/generated/numpy.save.html
- http://www.h5py.org/
- http://docs.enthought.com/mayavi/mayavi/auto/examples.html