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from osgeo import ogr
from shapely import wkt, geometry
import numpy as np
import pylab as pl

driver = ogr.GetDriverByName('ESRI Shapefile')
shapefile = driver.Open("data/biophypoly.shp", 0)
layer = shapefile.GetLayer(0)
features=layer.GetFeatureCount() #number of features
sp=pl.subplot(111)
sp.set_aspect('equal')
for i in range(features):
    #extent=layer.GetExtent()#north,south east,west extent
    feature = layer.GetNextFeature()
    #feature.keys() #show keys
    #feature.items()

    geom=feature.GetGeometryRef()
    A=geom.ExportToWkt() #well known text format
    B=wkt.loads(A) #import into shapely, plays well with numpy
    C=np.array(B.exterior)
    sp.plot(C[:,0],C[:,1])
pl.show()

```

```

import numpy as np
import pylab as pl
from shapely import geometry

start=np.array([0.,0.])
shift1=np.array([0,100])
shift2=np.array([100,0])
A=start
A=np.vstack((A,
             A[-1]+shift1))
A=np.vstack((A,
             A[-1]+shift2))
A=np.vstack((A,
             A[-1]-shift1))
A=np.vstack((A,
             A[-1]-shift2))

p1=geometry.Polygon(A)

start=np.array([50.,50.])
shift1=np.array([0,100])
shift2=np.array([100,0])
A=start
A=np.vstack((A,
             A[-1]+shift1))
A=np.vstack((A,
             A[-1]+shift2))
A=np.vstack((A,
             A[-1]-shift1))
A=np.vstack((A,
             A[-1]-shift2))

p2=geometry.Polygon(A)

un=p1.union(p2)

un=np.array(un.exterior)

pl.plot(un[:,0],un[:,1])
pl.show()

```

```
import quantities as un
'''
force on a block resting on an inclined plane
'''
#! The block has a density of 2000 kg/m3
#! The inclined plane is at 30 degrees
#! The block is 1 ft3

mass=1*un.foot**3 * 2000*un.kg/un.meter**3
force=mass*un.g*un.sin(30*un.degree)
```

Notes from Andrew Reeve, U. Maine