
meshioplt

リリース *0.0.1*

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第 1 章

インデックスとテーブル

- genindex
- modindex
- search

第2章

例

2.1 私たちは何をしたいの？

メッシュをプロットしようとする、コーディングに多大なコストがかかります。

```
[1]: %matplotlib inline
import meshio
import matplotlib
import getfem as gf
import numpy as np
import matplotlib.pyplot as plt
```

```
[2]: m = gf.Mesh("cartesian", np.arange(3), np.arange(3))
```

```
[3]: m.export_to_vtk("m.vtk", "ascii")
```

```
[4]: !cat m.vtk

# vtk DataFile Version 2.0
Exported by getfem++
ASCII
DATASET UNSTRUCTURED_GRID
POINTS 9 float
0 0 0
1 0 0
0 1 0
1 1 0
2 0 0
2 1 0
0 2 0
1 2 0
2 2 0
```

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(前のページからの続き)

```
CELLS 4 20
 4 0 1 3 2
 4 1 4 5 3
 4 2 3 7 6
 4 3 5 8 7

CELL_TYPES 4
 9
 9
 9
 9
```

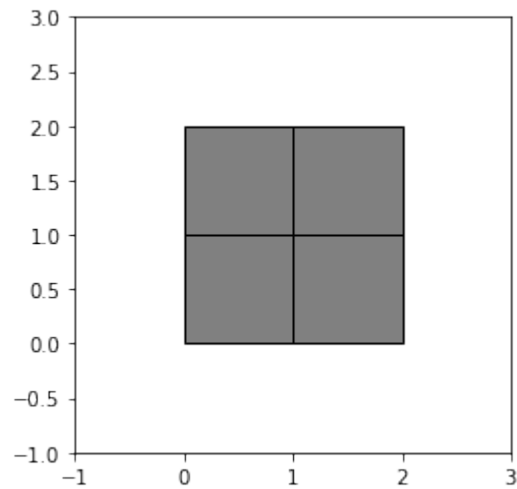
```
[5]: mesh = meshio.read("m.vtk")
```

```
[6]: points = mesh.points
     cells = mesh.cells
```

```
[7]: cells
```

```
[7]: [CellBlock(type='quad', data=array([[0, 1, 3, 2],
      [1, 4, 5, 3],
      [2, 3, 7, 6],
      [3, 5, 8, 7]]))]
```

```
[8]: figure = plt.figure()
     axe = figure.add_subplot(111)
     for cell in cells:
         for index in cell.data:
             polygon = plt.Polygon(
                 (
                     (points[index[0], 0], points[index[0], 1]),
                     (points[index[1], 0], points[index[1], 1]),
                     (points[index[2], 0], points[index[2], 1]),
                     (points[index[3], 0], points[index[3], 1]),
                 ),
                 edgecolor="black",
                 facecolor="gray",
             )
             axe.add_patch(polygon)
     axe.set_aspect("equal")
     plt.xlim(-1.0, 3.0)
     plt.ylim(-1.0, 3.0)
     plt.show()
```



[9]: `axe?`

```
Type: AxesSubplot
String form: AxesSubplot(0.260833,0.125;0.503333x0.755)
File: /usr/local/lib/python3.8/dist-packages/matplotlib/axes/_subplots.py
Docstring: <no docstring>
Class docstring:
Base class for subplots, which are :class:`Axes` instances with
additional methods to facilitate generating and manipulating a set
of :class:`Axes` within a figure.
Init docstring:
Parameters
-----
fig : `matplotlib.figure.Figure`

*args : tuple (*nrows*, *ncols*, *index*) or int
    The array of subplots in the figure has dimensions ``(nrows,
    ncols)`` , and *index* is the index of the subplot being created.
    *index* starts at 1 in the upper left corner and increases to the
    right.

    If *nrows*, *ncols*, and *index* are all single digit numbers, then
    *args* can be passed as a single 3-digit number (e.g. 234 for
    (2, 3, 4)).

**kwargs
    Keyword arguments are passed to the Axes (sub)class constructor.
```

2.2 meshiopl でできること

We can read mesh file and write to AxesSubplot. We can use AxesSubplot as matplotlib 's AxesSubplot

```
[10]: from meshiopl import mesh_patches
```

```
figure = plt.figure()
axe = figure.add_subplot(111)
patches = mesh_patches("m.vtk")
for patch in patches:
    axe.add_patch(patch)
axe.set_aspect("equal")
plt.xlim(-1.0, 3.0)
plt.ylim(-1.0, 3.0)
plt.show()
```

