

- 1 将上次作业中 D_{xx} , D_{xy} , D_{yy} 画在同一图中。

读入数据后，初始化 figure 中的三个子图，并配置距离。绘图后调整 colorbar 长宽比、缩放比例，使之符合要求。具体见代码：

[test.py](#)

```

1 import matplotlib.colors as colors
2 import matplotlib.pyplot as plt
3 from mpl_toolkits.axes_grid1 import make_axes_locatable
4 import numpy as np
5 from scipy.io import FortranFile
6
7 #Read file, according to codes given in the slides
8 f = FortranFile('COEFF_DAY.DAT', 'r')
9 nx = f.read_ints()[0]
10 ny = f.read_ints()[0]
11 xy = f.read_reals(dtype=np.float32)
12 x = xy[:nx]
13 y = xy[nx:]
14 bdxx = f.read_reals(dtype=np.float32).reshape((nx, ny))
15 bdyx = f.read_reals(dtype=np.float32).reshape((nx, ny))
16 bdyx = f.read_reals(dtype=np.float32).reshape((nx, ny))
17 X, Y = np.meshgrid(x, y)
18 f.close()
19
20 bdyx = bdyx / Y**2
21 bdyx = bdyx / Y
22
23 bdyx = np.abs(bdyx)
24 bdyx = np.abs(bdyx)
25
26 alpha = X/np.pi*180
27 Ek = 0.511*(np.sqrt(Y*Y+1)-1)
28
29 #Set normalize method for colormap
30 norm = colors.LogNorm(vmin=1e-8, vmax=1e-3)
31
32 #Set figure with 3 subplots
33 fig, axs = plt.subplots(3, 1, sharex=True, sharey=True)
34 fig.set_size_inches(8.5, 15, forward=True)
35 fig.subplots_adjust(hspace=0.02, left=0.05, right=0.94,
36                     bottom=0.06, top=0.96)

```

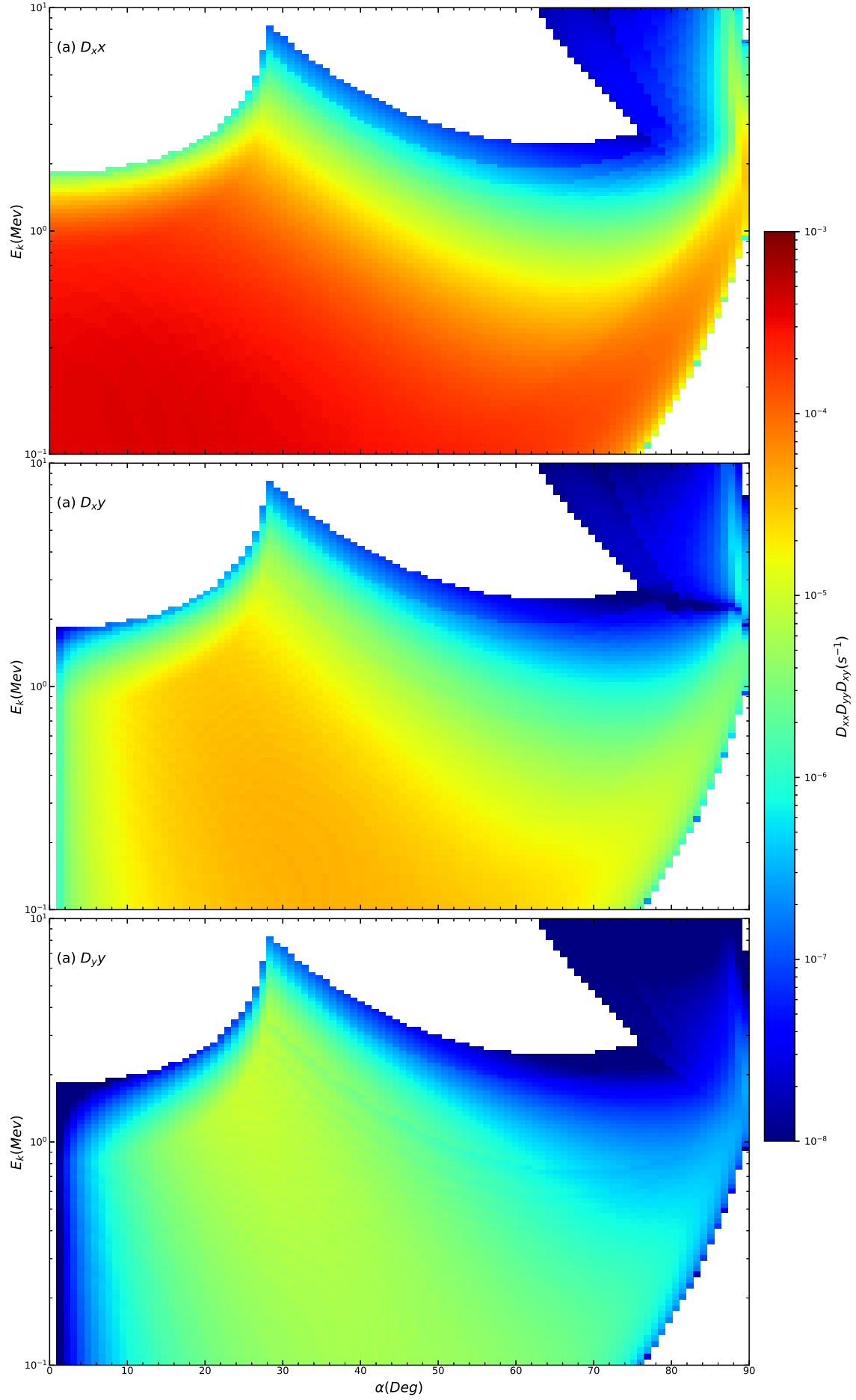
```

37
38 #Plot data and names.
39 pxx = axs[0].pcolormesh(alpha, Ek, bdx, cmap='jet', norm=norm)
40 axs[0].text(0.01, 0.9, r'(a)  $D_{xx}$ ', transform=axs[0].transAxes)
41 pxy = axs[1].pcolormesh(alpha, Ek, bdy, cmap='jet', norm=norm)
42 axs[1].text(0.01, 0.9, r'(a)  $D_{xy}$ ', transform=axs[1].transAxes)
43 pyy = axs[2].pcolormesh(alpha, Ek, bdy, cmap='jet', norm=norm)
44 axs[2].text(0.01, 0.9, r'(a)  $D_{yy}$ ', transform=axs[2].transAxes)
45 axs[2].set_xlabel(r'\alpha (Deg)')
46 for ax in axs:
47     ax.set_ylabel(r'$E_k$ (MeV)', labelpad=0.)
48     ax.set_yscale('log')
49     ax.minorticks_on()
50     ax.tick_params(which='both', right=True, pad=1,
51                    labelsize='x-small', top=True, direction='in')
52 cbar = fig.colorbar(pxx, ax=axs, aspect=30, shrink=0.67,
53                    fraction=0.06, pad=0.02)
54 cbar.ax.set_ylabel(r'$D_{xx} D_{yy} D_{xy} (s^{-1})$')
55 cbar.ax.tick_params(labelsize='x-small')
56
57 #Save
58 plt.savefig('test.eps', format='eps')

```

绘出图像如下:

[test.eps](#)



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