

FortranPython

March 2, 2020

1 Fortran-Python example

Load an extension into Jupyter notebook

```
[1]: %load_ext fortranmagic
```

Define the function $z(x, y) = \sin(\frac{x}{3} \frac{y}{3}) + \cos(xy)$

```
[2]: %%fortran -v
subroutine f1(x, y, z)
    real, intent(in) :: x,y
    real, intent(out) :: z

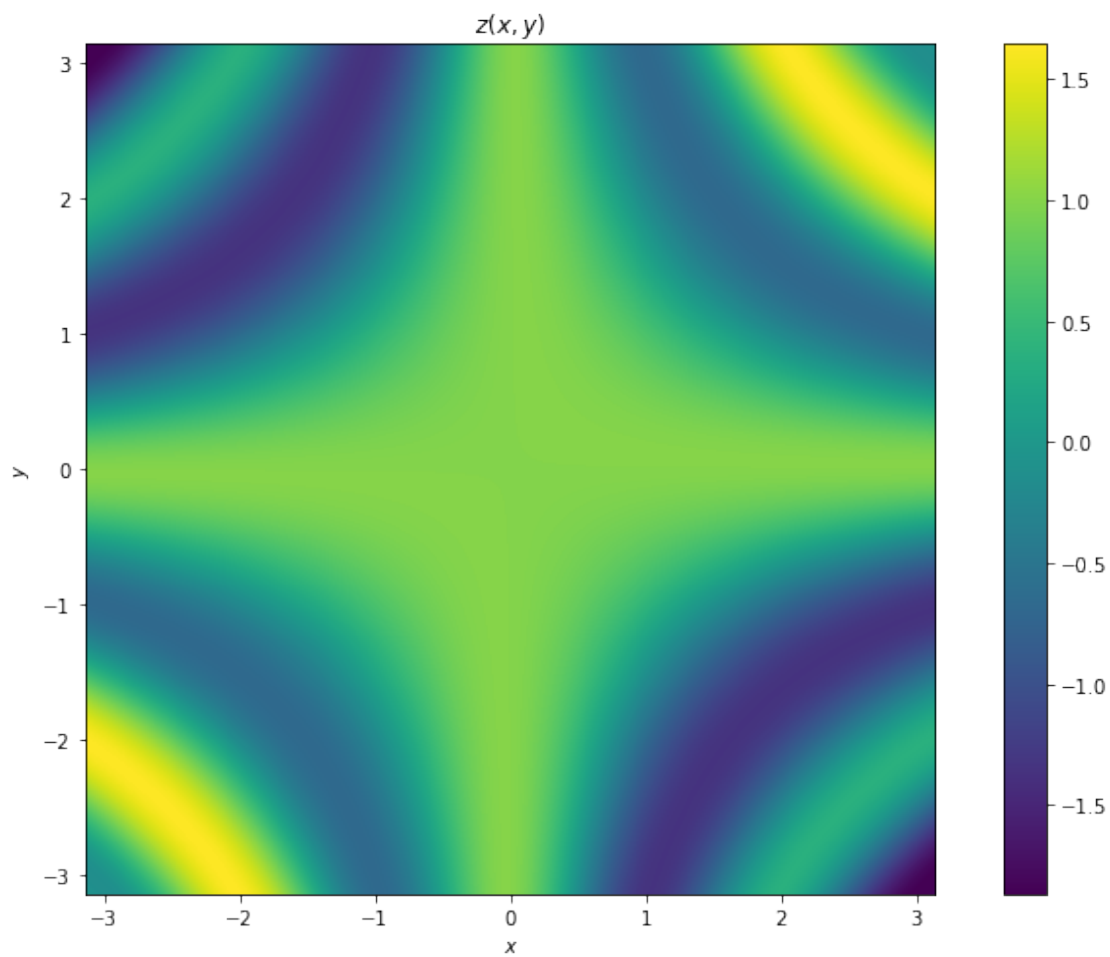
    z = sin(x / 3 * y / 3) + cos(x * y)

end subroutine f1
```

Ok. The following fortran objects are ready to use: f1

```
[8]: import numpy as np
import pylab as plt
```

```
[9]: twopi = np.pi;
x0,x1,y0,y1 = -twopi, twopi, -twopi, twopi;
f = [[f1(x,y) for x in np.linspace(x0,x1,num=500)] for y in np.
    ↳linspace(y0,y1,num=500)]
plt.figure(figsize=(10,7))
plt.imshow(f,interpolation="bicubic",origin="lower",extent=[x0,x1,y0,y1])
plt.colorbar()
plt.title(r"$z(x,y)$")
plt.xlabel(r"$x$")
plt.ylabel(r"$y$")
plt.tight_layout()
plt.show()
```



[]: