PK_techsweep_plots_from_mat_v1

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1 Reviewing Gm/ID in gf180mcuD

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Based on Boris Murmann's script.

[43]:
```
import numpy as np
import scipy.constants as sc
import matplotlib.pyplot as plt
from pygmid import Lookup as lk
%matplotlib widget
```

[44]:
```
choice = 1  #set to 0 for nmos and 1 for pmos
devices = ['nfet_03v3', 'pfet_03v3']
fet = lk('./simulation/'+devices[choice]+'.mat')
```

[45]:
```
# Current Density Reference Current
# weak inversion
K_wi = np.array([ 28, 27 ]) # S/A
# strong inversion
K_si = np.array([10*np.sqrt(2e-6) , 6*np.sqrt(1.7e-6) ]) # S/A/sqrt(A)
# reference current
I0 = (K_si/K_wi)**2
```

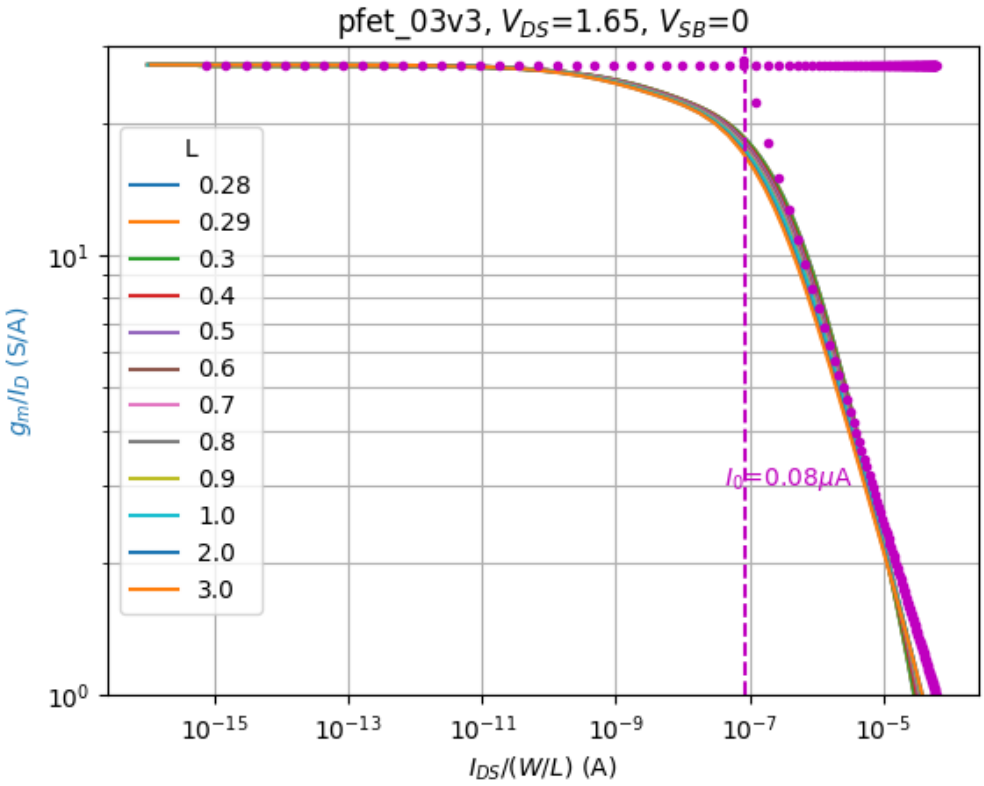
[46]:
```
# sweep variable vectors
w = fet['W']
l = fet['L']
vgs = fet['VGS']
vds = fet['VDS']
vsb = fet['VSB']
```

[47]:
```
print(f'Transistor Width is {w} and Lengths are {l}')
```

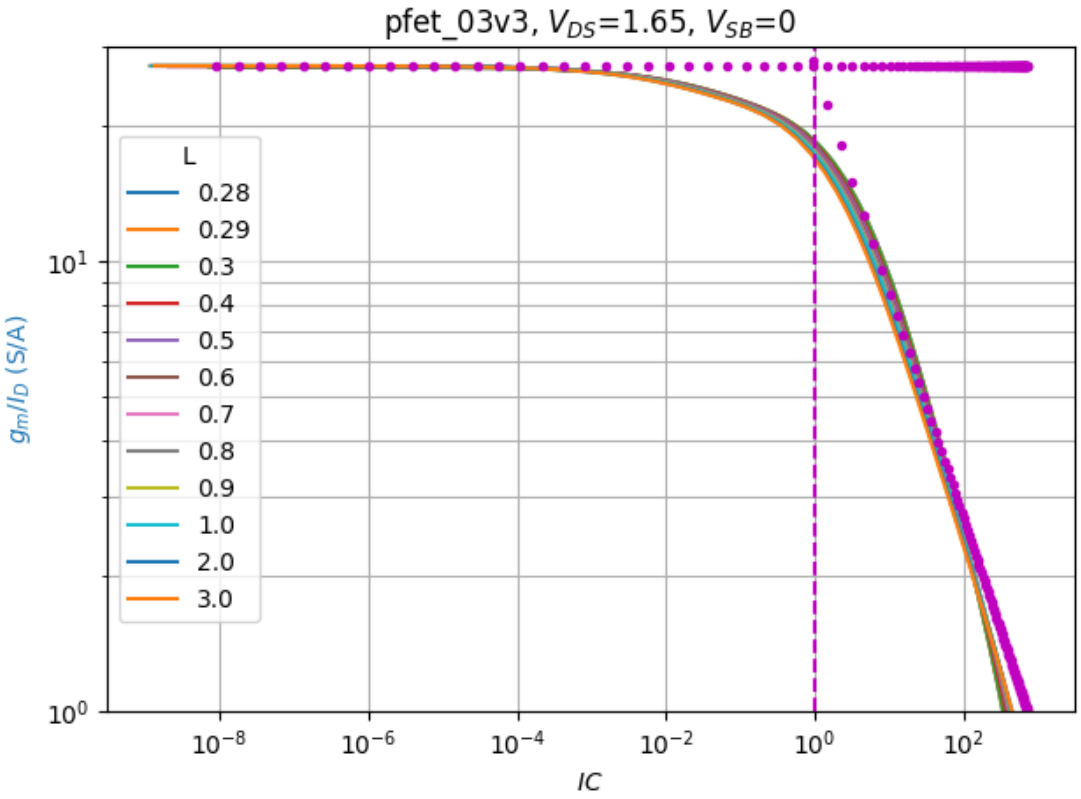
```
Transistor Width is 5.0 and Lengths are [0.28 0.29 0.3  0.4  0.5  0.6  0.7  0.8
0.9  1.   2.   3.  ]
```

[48]:
```
VDS1=1.65; VSB1=0
```

1.1 Gm/ID versus ID/(W/L)



1.2 Gm/ID versus Current Density



1.3 Gm/ID and fT versus ID/(W/L)