Calvin Passmore

A02107892

ECE 5420

First output:

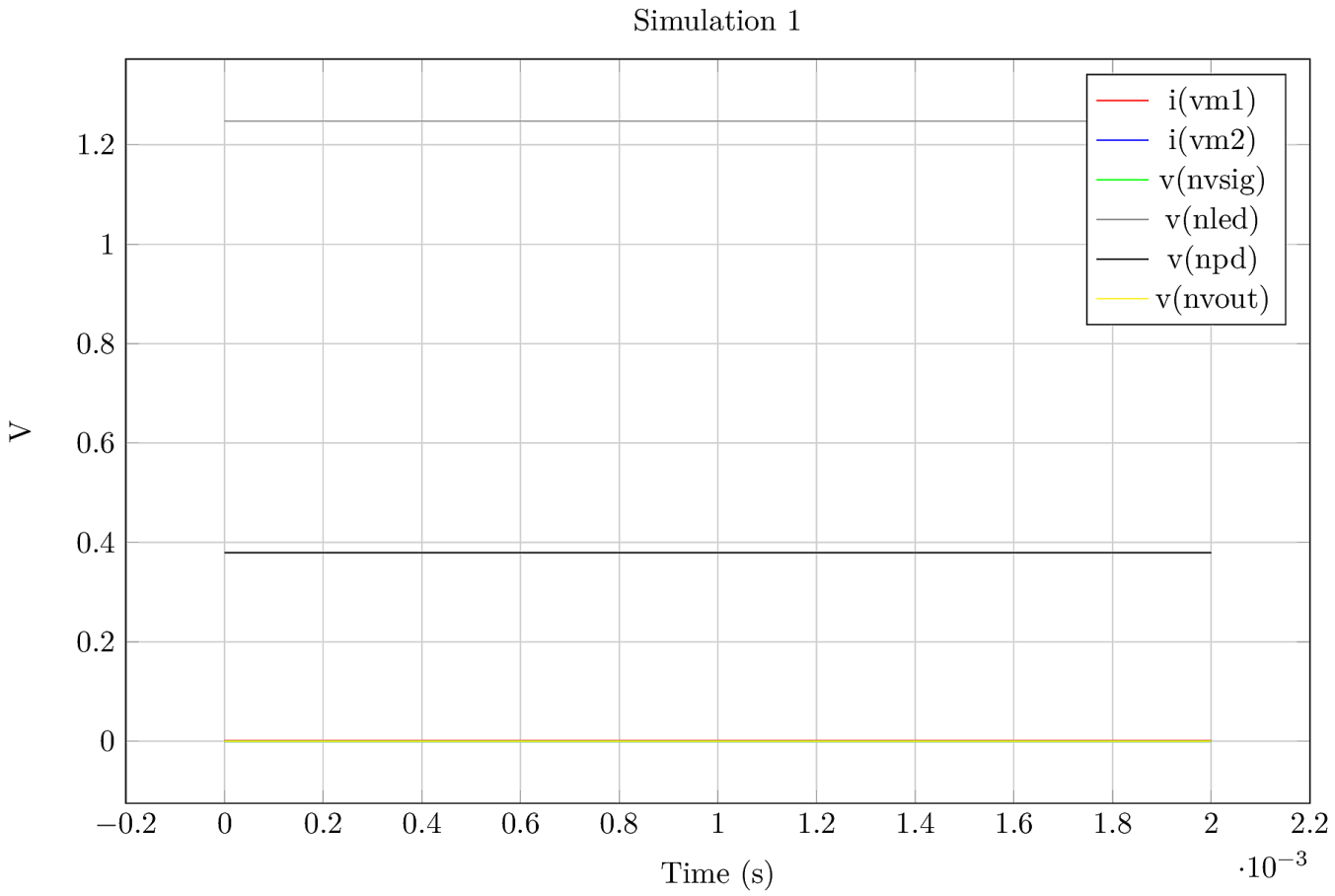
```
nvx = 1.247910e+00
nvy = 3.788906e-01
i(vm1) = 1.136997e-03
i(vm2) = 3.332524e-05
```

This was close to the expected values.

Transient Solution

```
Initial Transient Solution
--------------------------

Node                                   Voltage
----                                   -------
nvdd                                         5
nsig                                         0
nvx                                    1.24791
nled                                   1.24791
nvy                                   0.378891
npd                                   0.378891
nvsig                                  1.24791
nc                                     1.24791
nvout                                 0.378887
vm1#branch                            0.001137
vm2#branch                          3.33252e-05
vsig#branch                                  0
vdd#branch                          -0.00118321
```

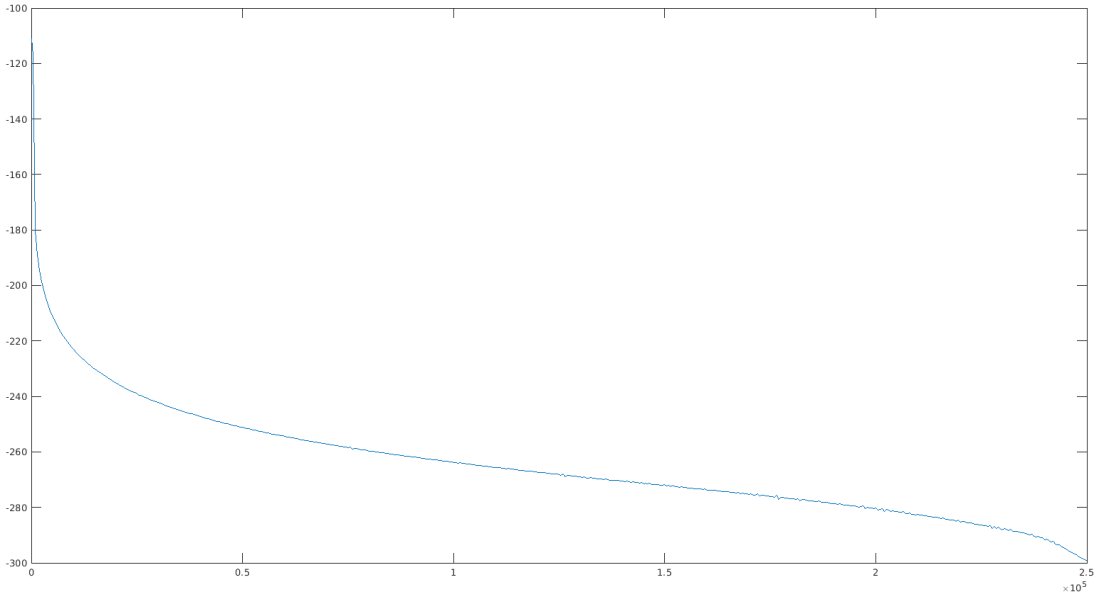
sim1 png output



MATLAB STUFF TODO

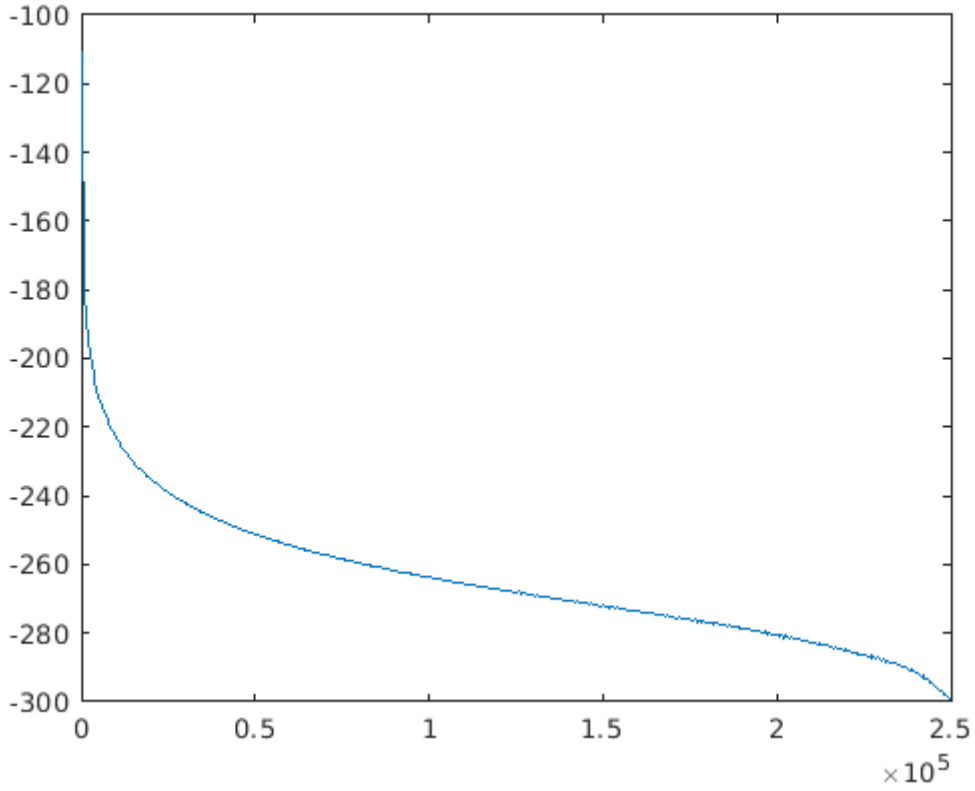
```
Fourier analysis for v(nvout):
  No. Harmonics: 10, THD: 73.5045 %, Gridsize: 200, Interpolation Degree: 1

Harmonic Frequency   Magnitude   Phase       Norm. Mag   Norm. Phase
-------- ---------   ---------   -----       ---------   -----------
 0       0           -1.4001e-06 0           0           0
 1       5000        8.90459e-11 -179.1      1           0
 2       10000       4.45281e-11 -178.2      0.500058    0.901387
 3       15000       2.96904e-11 -177.3      0.333428    1.80209
 4       20000       2.22746e-11 -176.4      0.250147    2.70049
 5       25000       1.78105e-11 -175.48     0.200014    3.62102
 6       30000       1.48622e-11 -174.6      0.166904    4.50241
 7       35000       1.27466e-11 -173.7      0.143147    5.39605
 8       40000       1.11597e-11 -172.81     0.125325    6.28972
 9       45000       9.92586e-12 -171.91     0.111469    7.18534
```

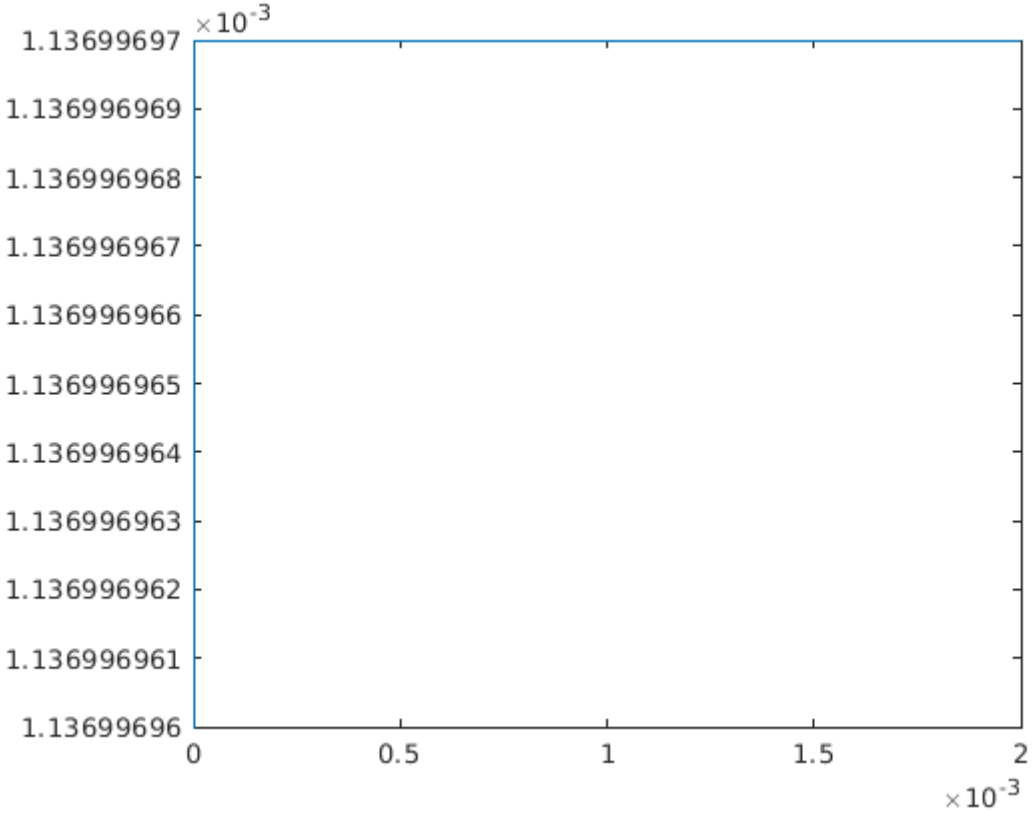
Matlab FFT

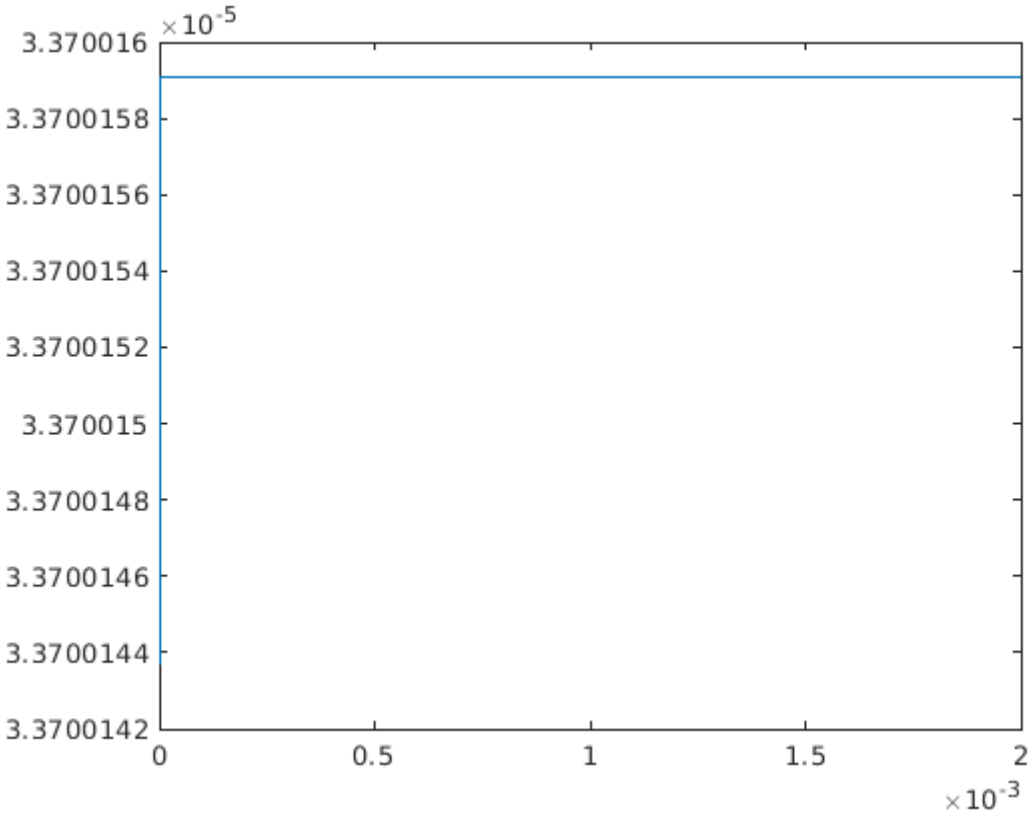


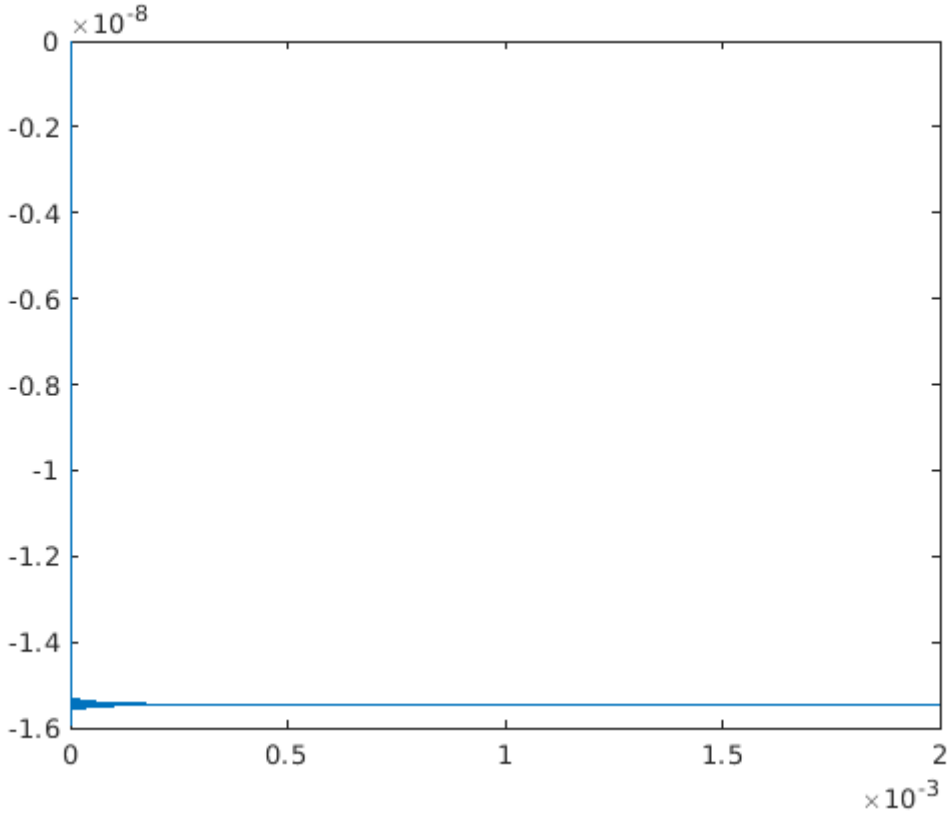

```
maxdb                =  -inf at=  1.000000e+06
Error(checkvalid): vector inf is not available or has zero length.
Error: RHS " -inf" invalid
Error(checkvalid): vector maxdb is not available or has zero length.
Error: RHS "maxdb - 3.0" invalid

Error: measure  fl  find(AT) : out of interval
 meas ac fl find frequency when vdb(nvout)=cutoffmag failed!


Error: measure  f2  find(AT) : out of interval
 meas ac f2 find frequency when vdb(nvout)=cutoffmag cross=last failed!

Error: &maxdb: no such variable.
Max dB =
Error: &fl: no such variable.
Lower Cutoff Frequency =
Error: &f2: no such variable.
Higher Cutoff Frequency =
```

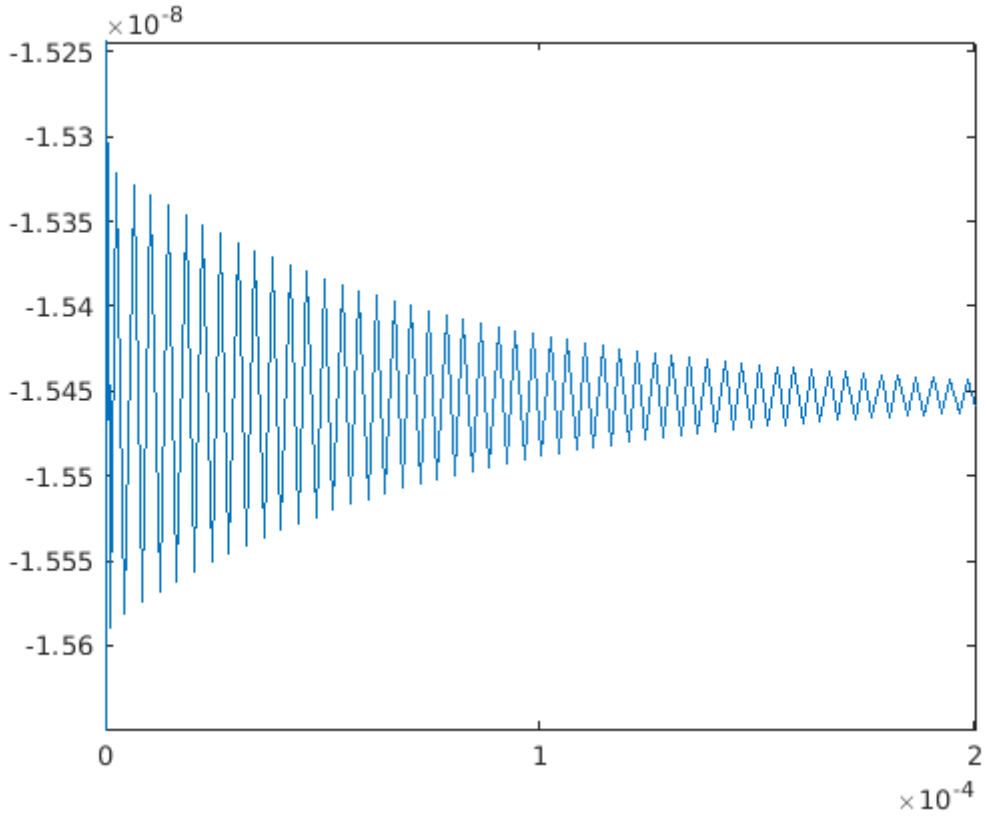
A = 0.02

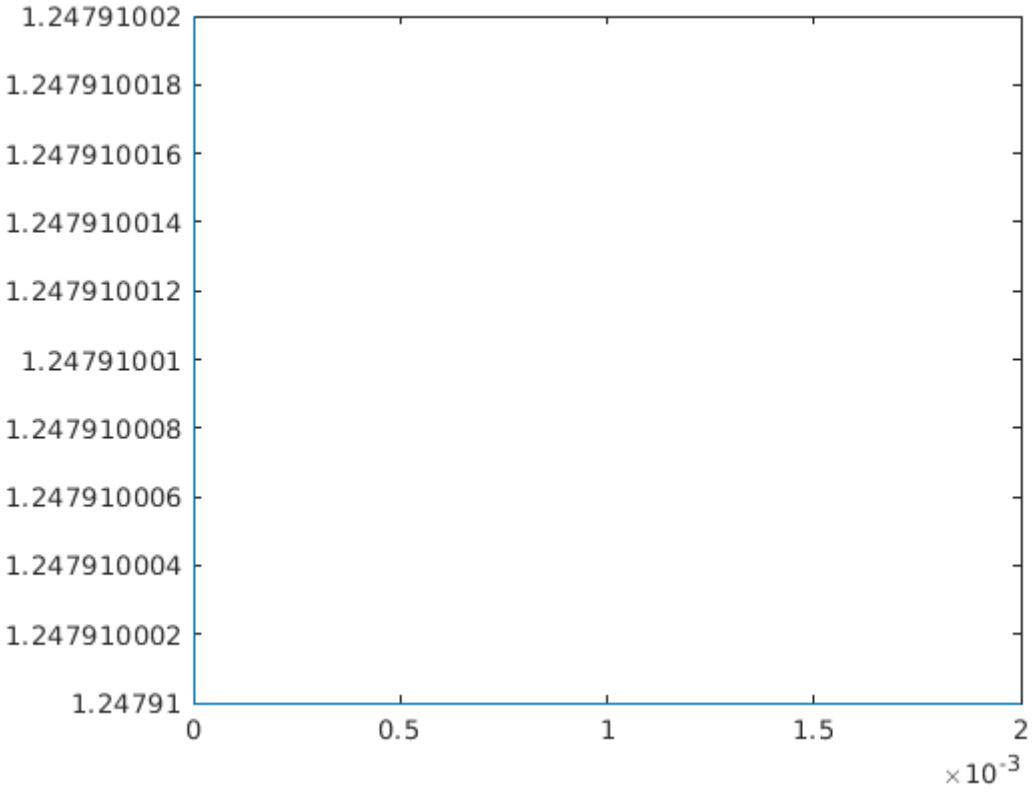

-100
-120
-140
-160
-180
-200
-220
-240
-260
-280
-300
0
0.5
1
1.5
2
2.5
×10^5

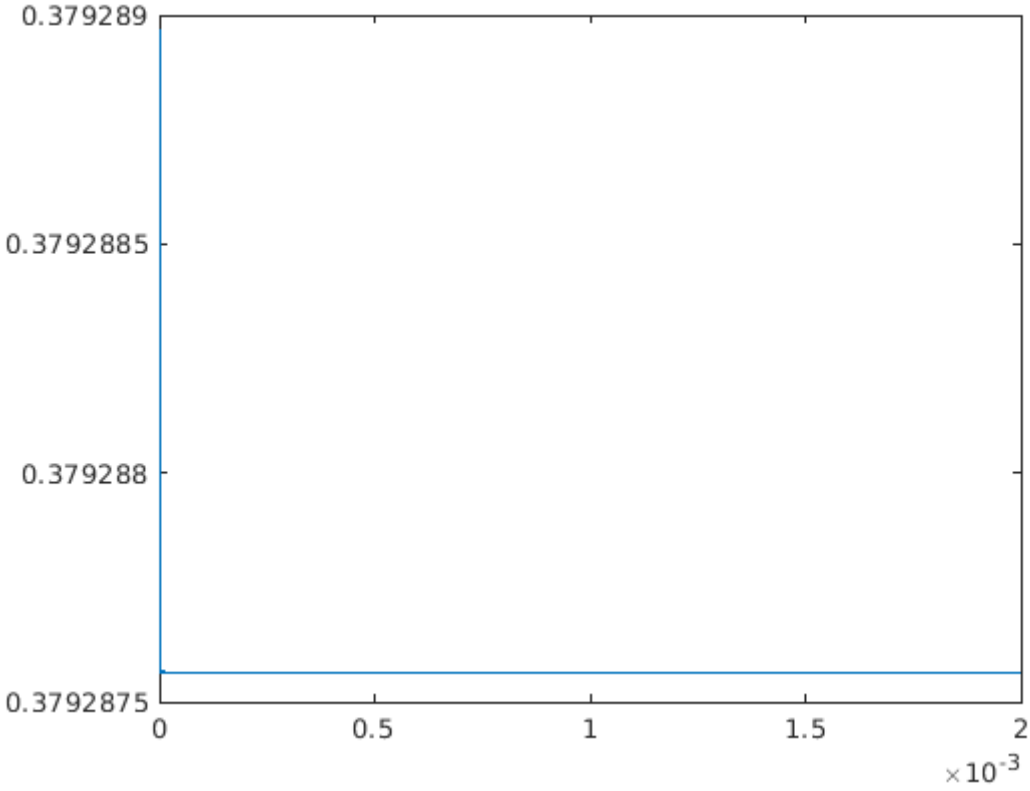

×10^-3
1.13699697
1.136996969
1.136996968
1.136996967
1.136996966
1.136996965
1.136996964
1.136996963
1.136996962
1.136996961
1.13699696
0
0.5
1
1.5
2
×10^-3


×10^-5
3.370016
3.3700158
3.3700156
3.3700154
3.3700152
3.370015
3.3700148
3.3700146
3.3700144
3.3700142
0
0.5
1
1.5
2
×10^-3

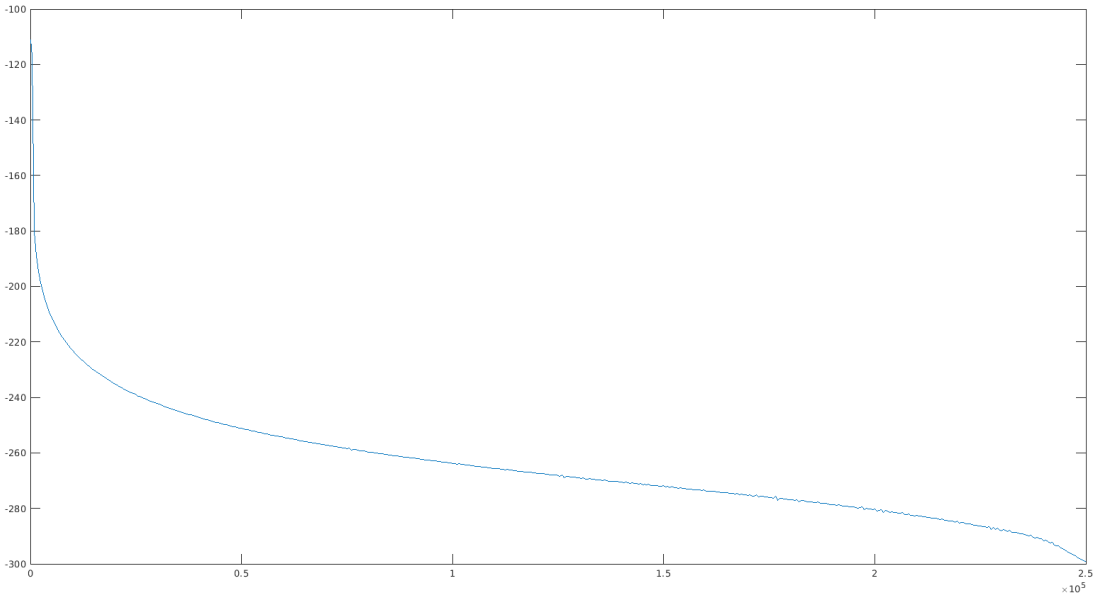

×10^-8
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
-1.4
-1.6
0
0.5
1
1.5
2
×10^-3

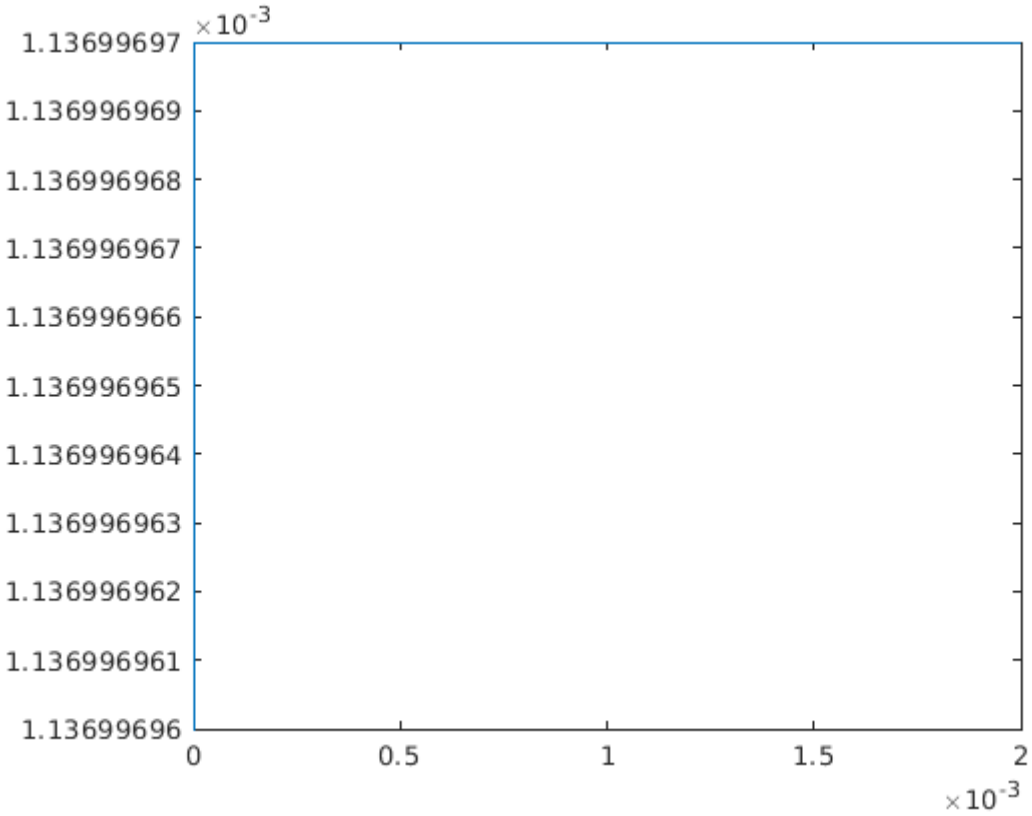

×10^-8
-1.525
-1.53
-1.535
-1.54
-1.545
-1.55
-1.555
-1.56
0
1
2
×10^-4

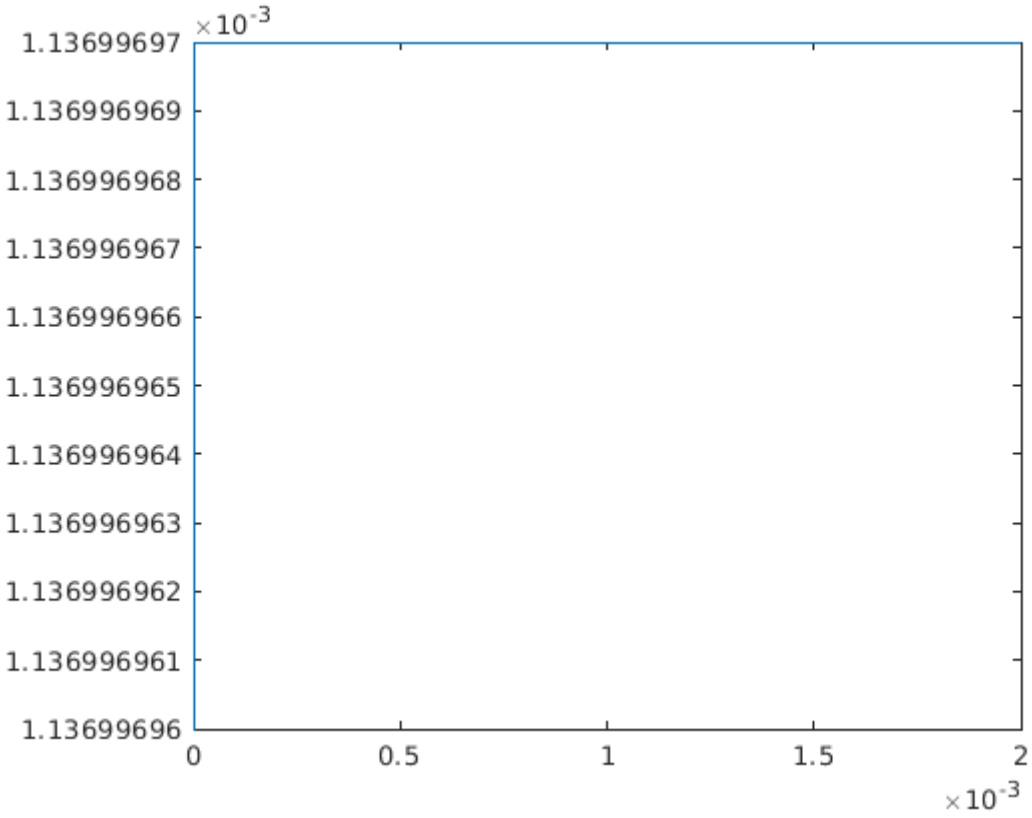

1.24791002
1.247910018
1.247910016
1.247910014
1.247910012
1.24791001
1.247910008
1.247910006
1.247910004
1.247910002
1.24791
0
0.5
1
1.5
2
×10^-3

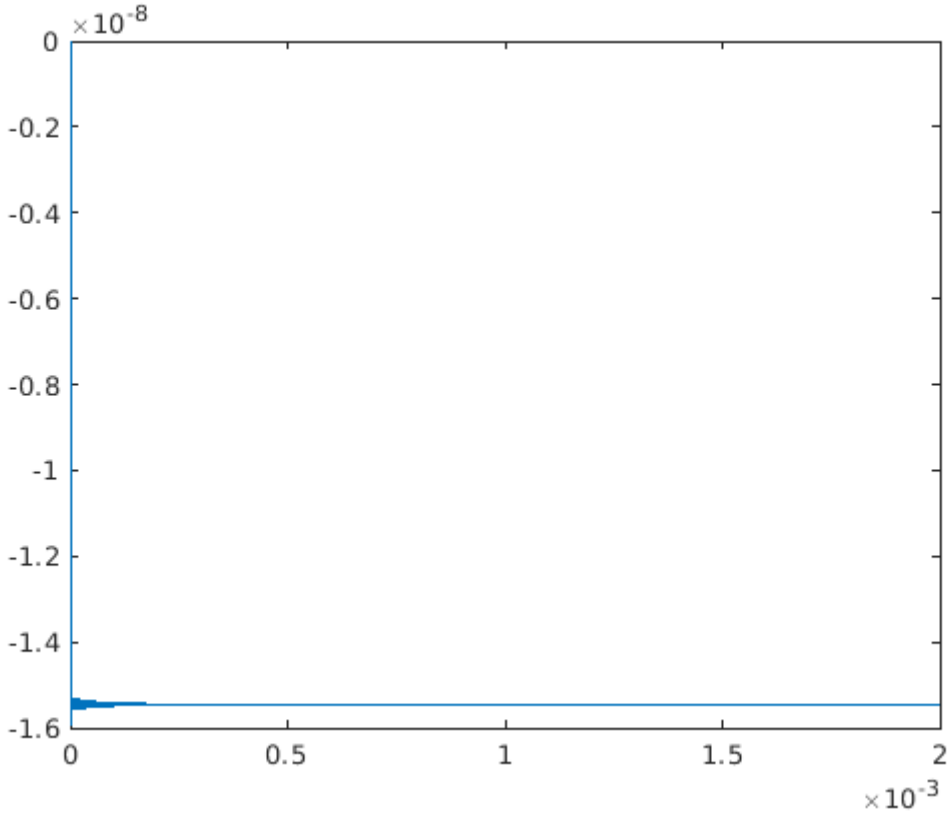


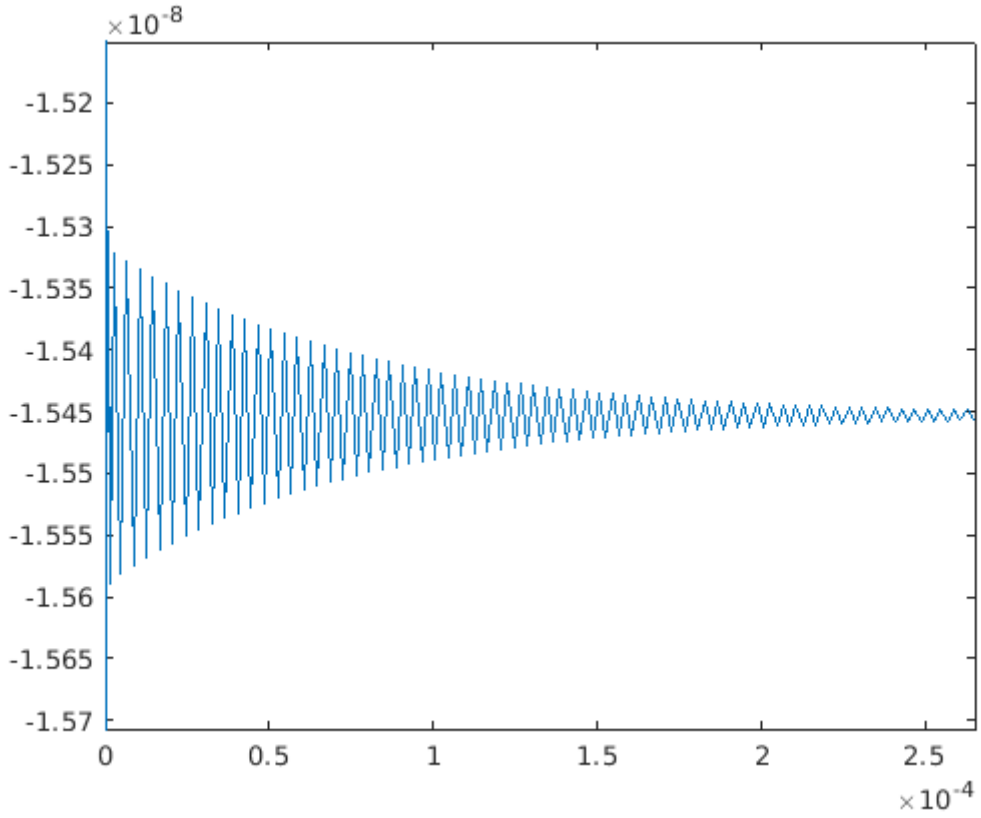
A = 0.01

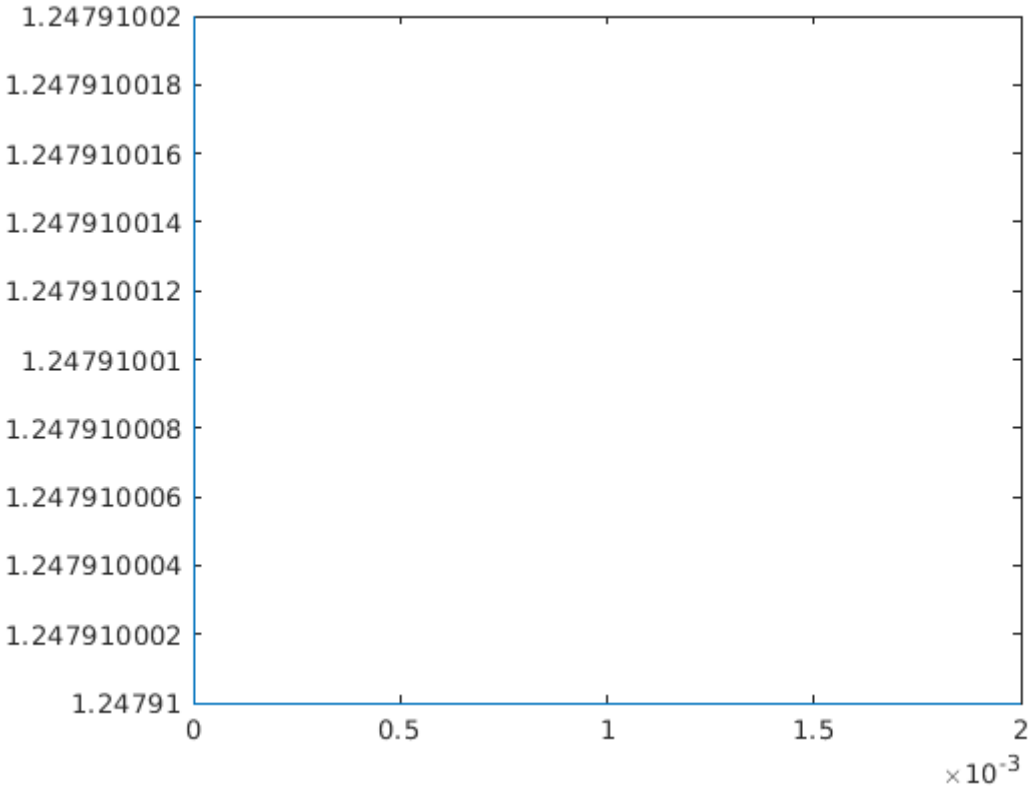

-100
-120
-140
-160
-180
-200
-220
-240
-260
-280
-300
0
0.5
1
1.5
2
2.5
×10^5

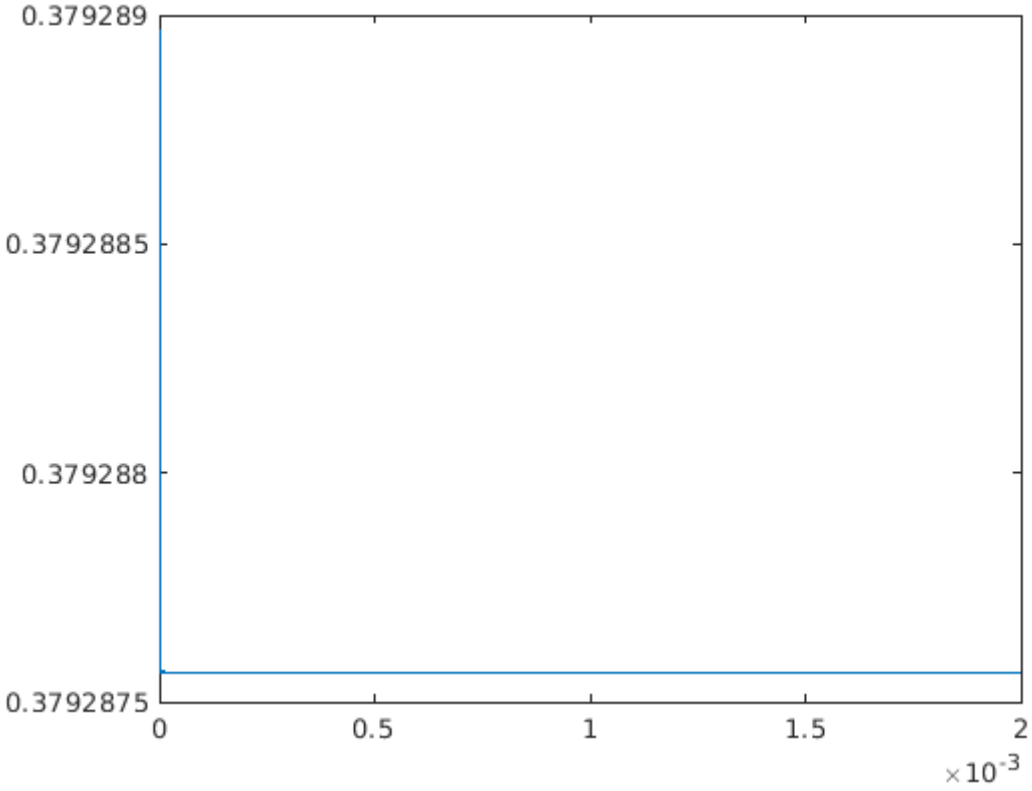

×10^-3
1.13699697
1.136996969
1.136996968
1.136996967
1.136996966
1.136996965
1.136996964
1.136996963
1.136996962
1.136996961
1.13699696
0
0.5
1
1.5
2
×10^-3

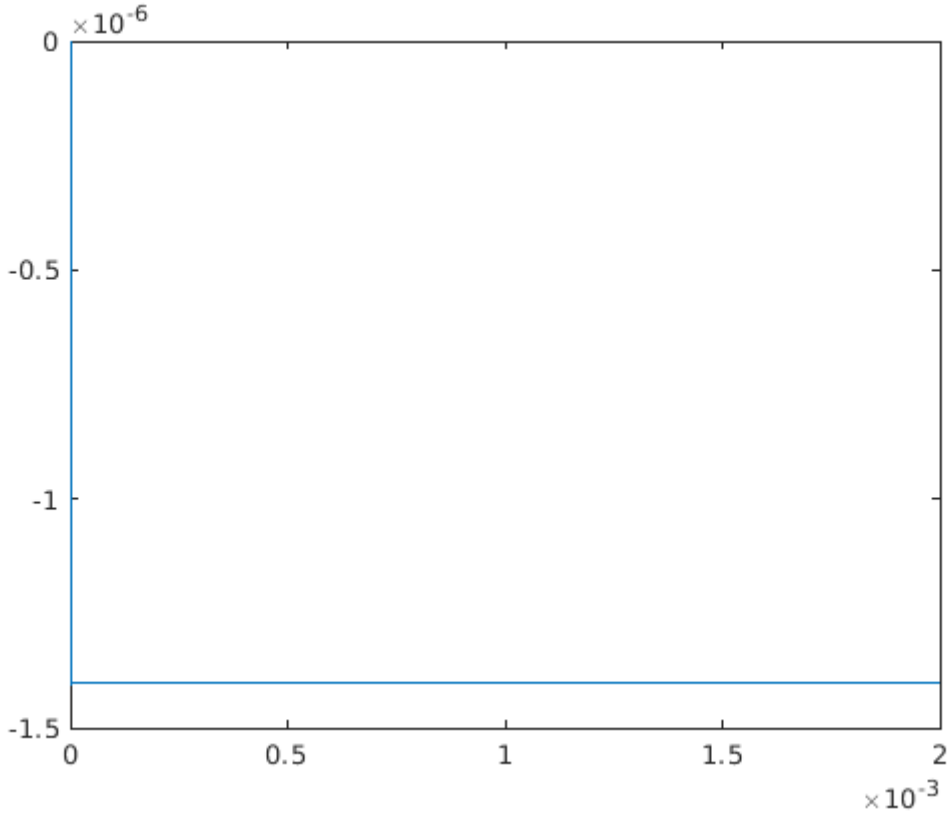

×10^-3
1.13699697
1.136996969
1.136996968
1.136996967
1.136996966
1.136996965
1.136996964
1.136996963
1.136996962
1.136996961
1.13699696
0
0.5
1
1.5
2
×10^-3


×10^-8
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
-1.4
-1.6
0
0.5
1
1.5
2
×10^-3

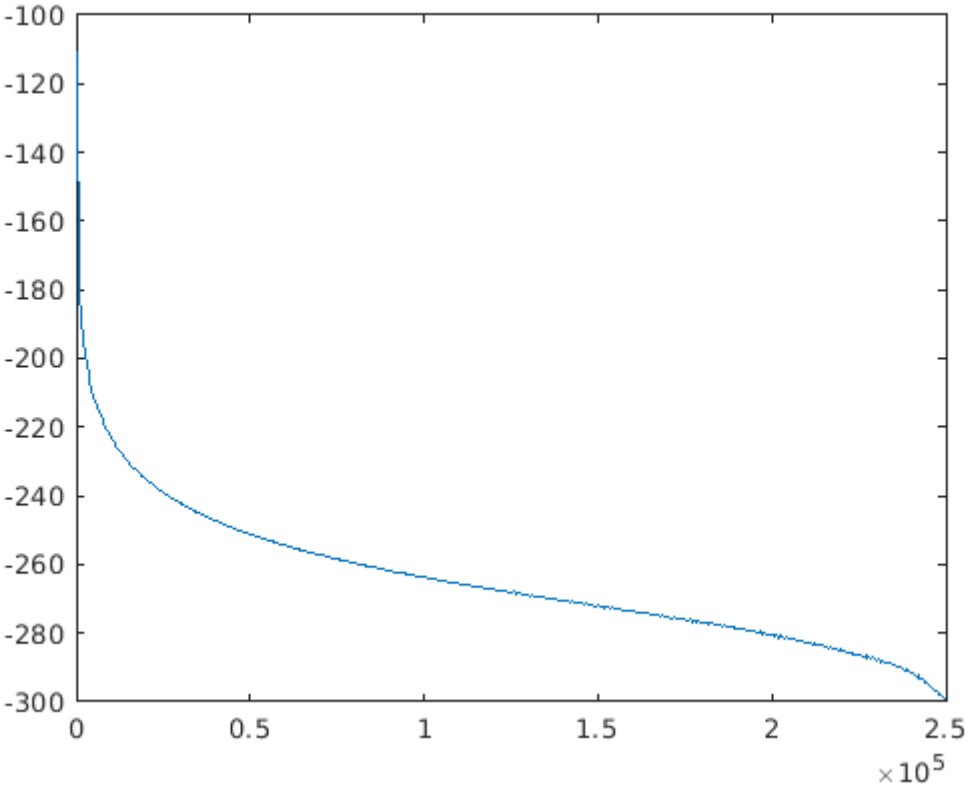

×10^-8
-1.52
-1.525
-1.53
-1.535
-1.54
-1.545
-1.55
-1.555
-1.56
-1.565
-1.57
0
0.5
1
1.5
2
2.5
×10^-4

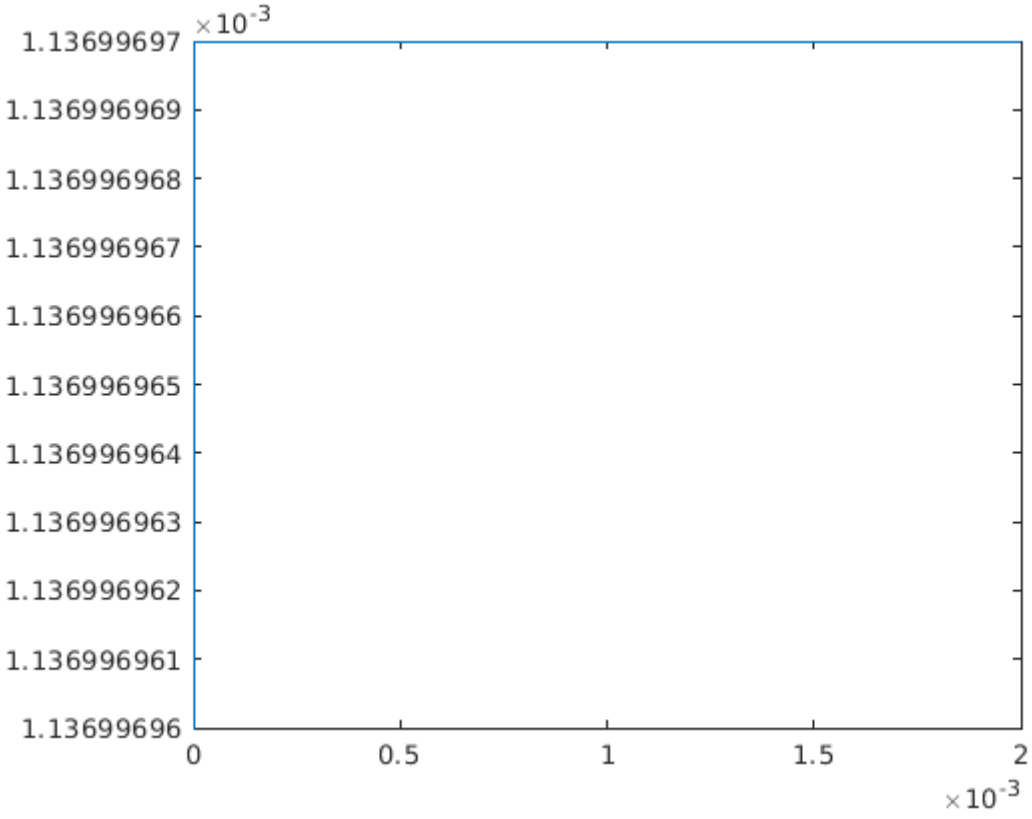

1.24791002
1.247910018
1.247910016
1.247910014
1.247910012
1.24791001
1.247910008
1.247910006
1.247910004
1.247910002
1.24791
0
0.5
1
1.5
2
×10^-3

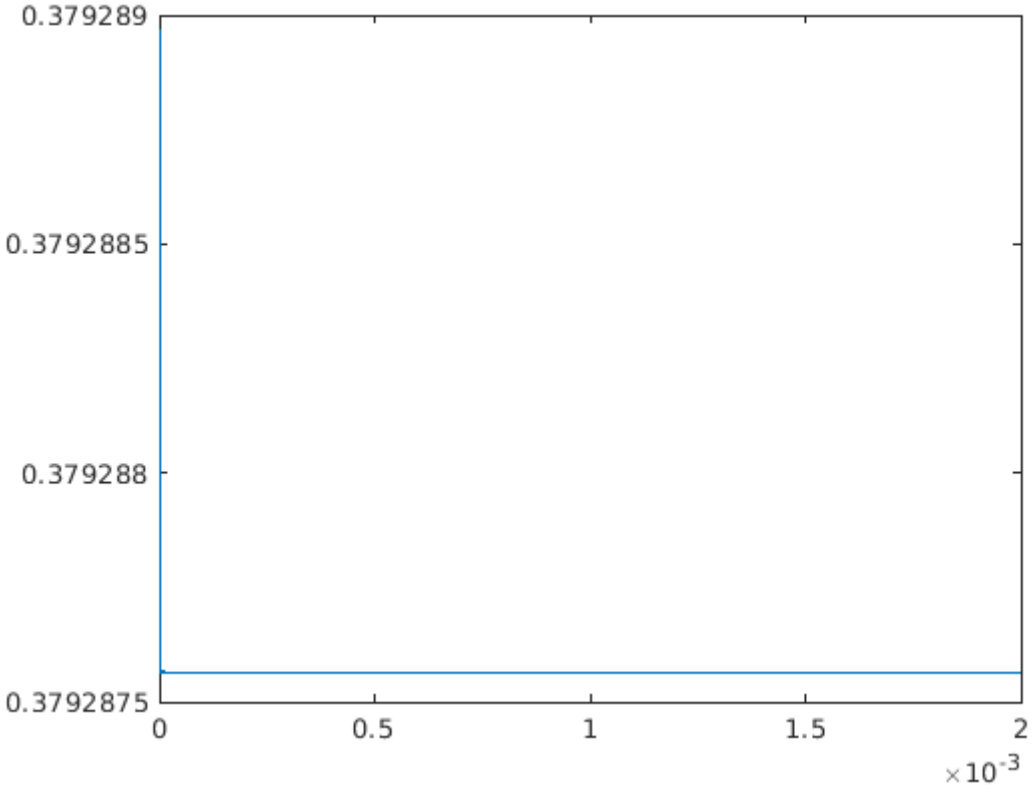

0.379289
0.3792885
0.379288
0.3792875
0
0.5
1
1.5
2
×10-3

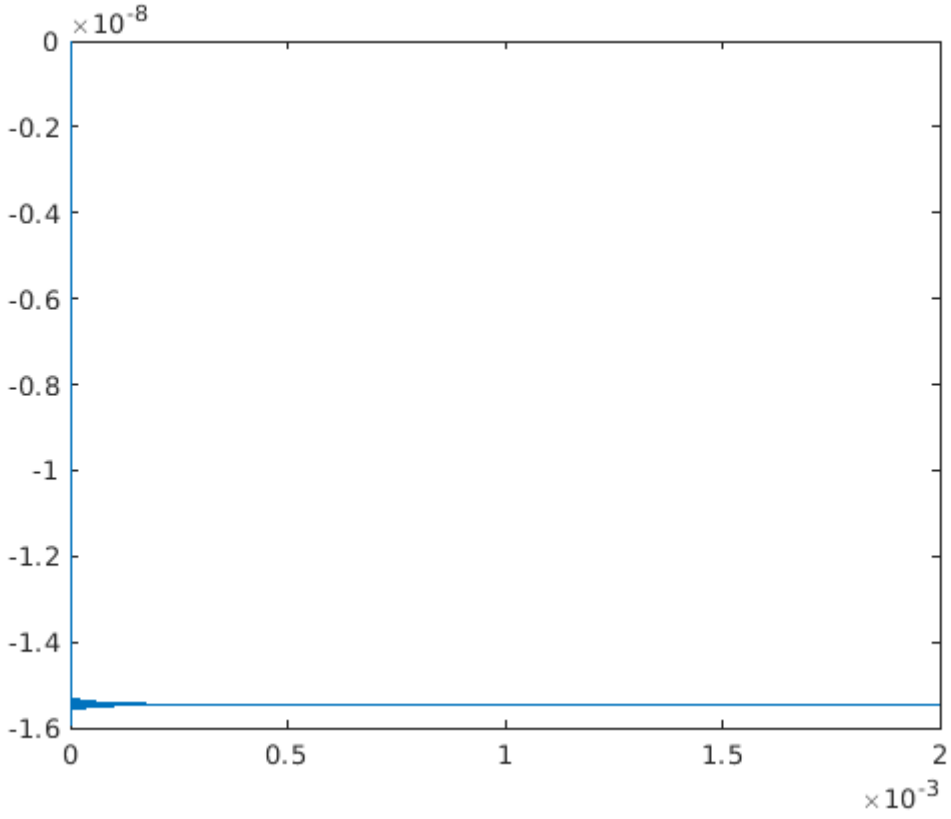

×10-6
0
-0.5
-1
-1.5
0
0.5
1
1.5
2
×10-3

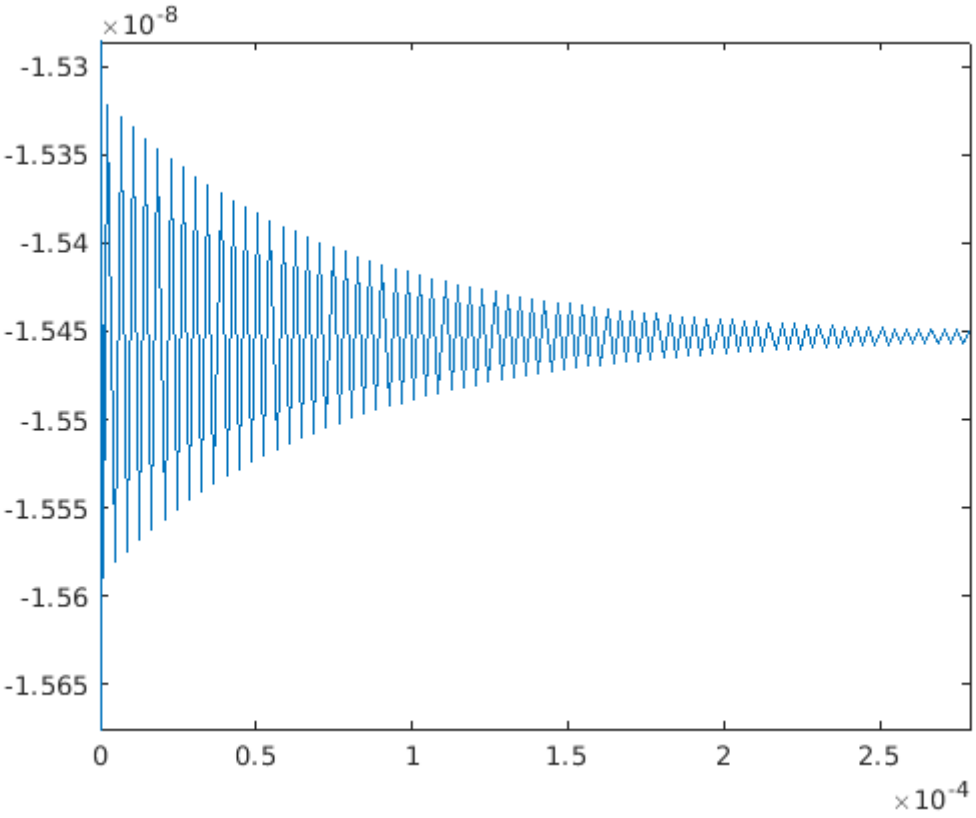
A = 0.005

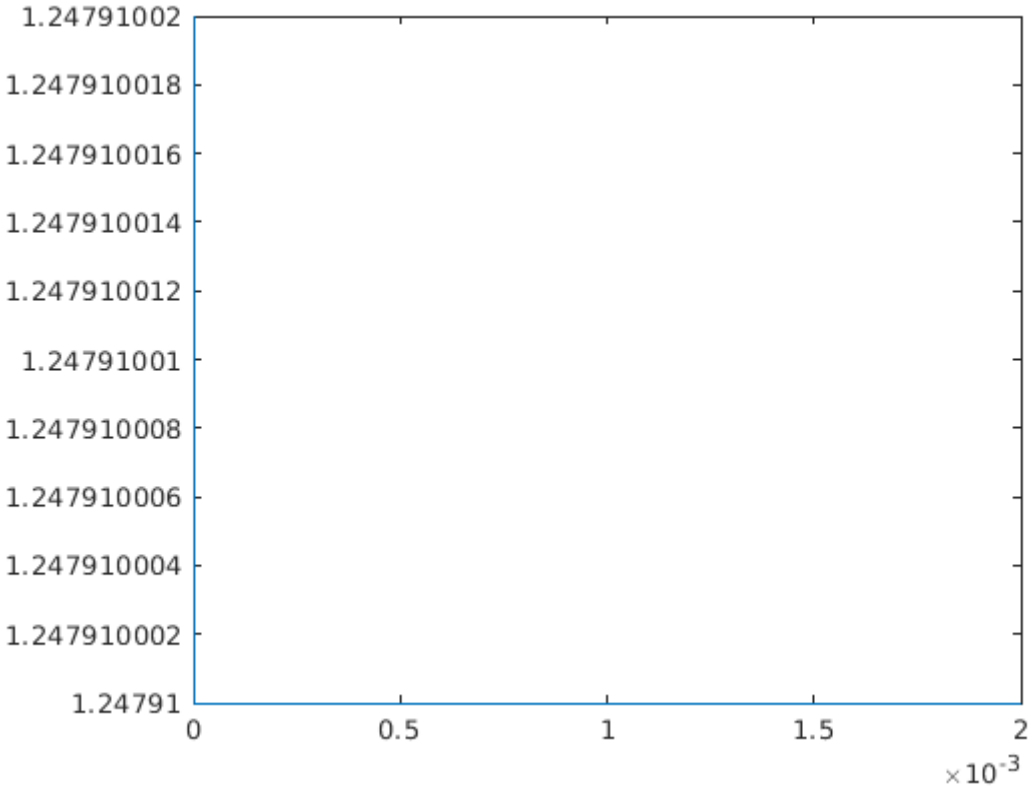

-100
-120
-140
-160
-180
-200
-220
-240
-260
-280
-300
0
0.5
1
1.5
2
2.5
×10^5

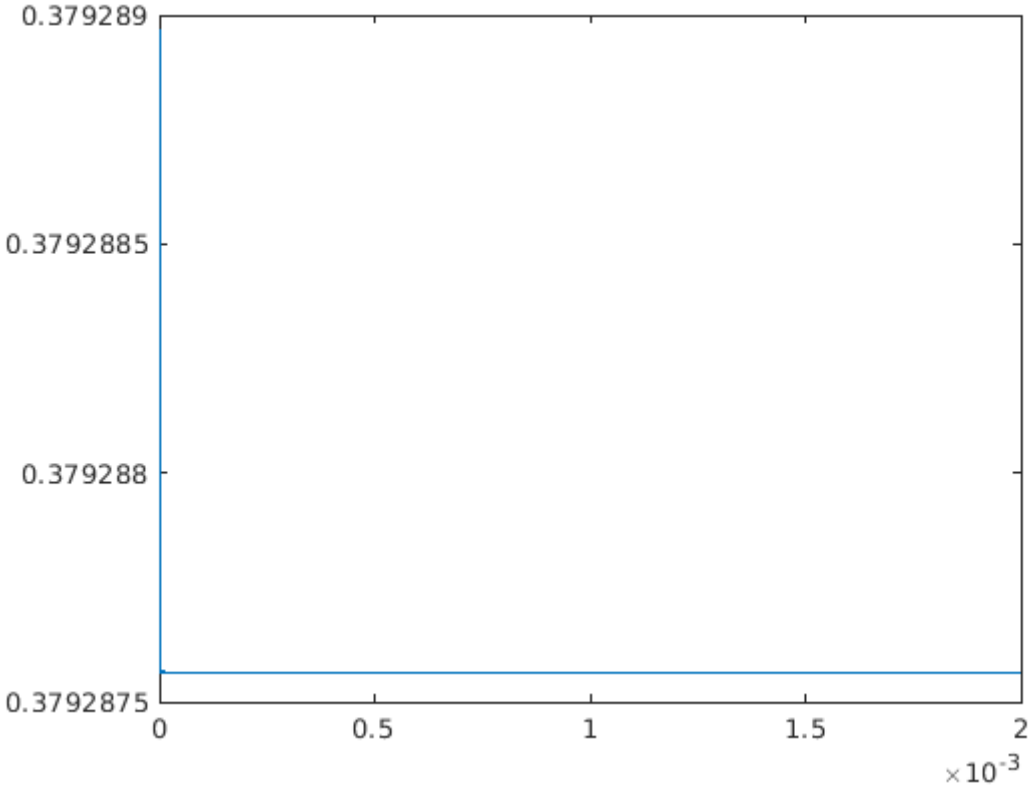

×10^-3
1.13699697
1.136996969
1.136996968
1.136996967
1.136996966
1.136996965
1.136996964
1.136996963
1.136996962
1.136996961
1.13699696
0
0.5
1
1.5
2
×10^-3

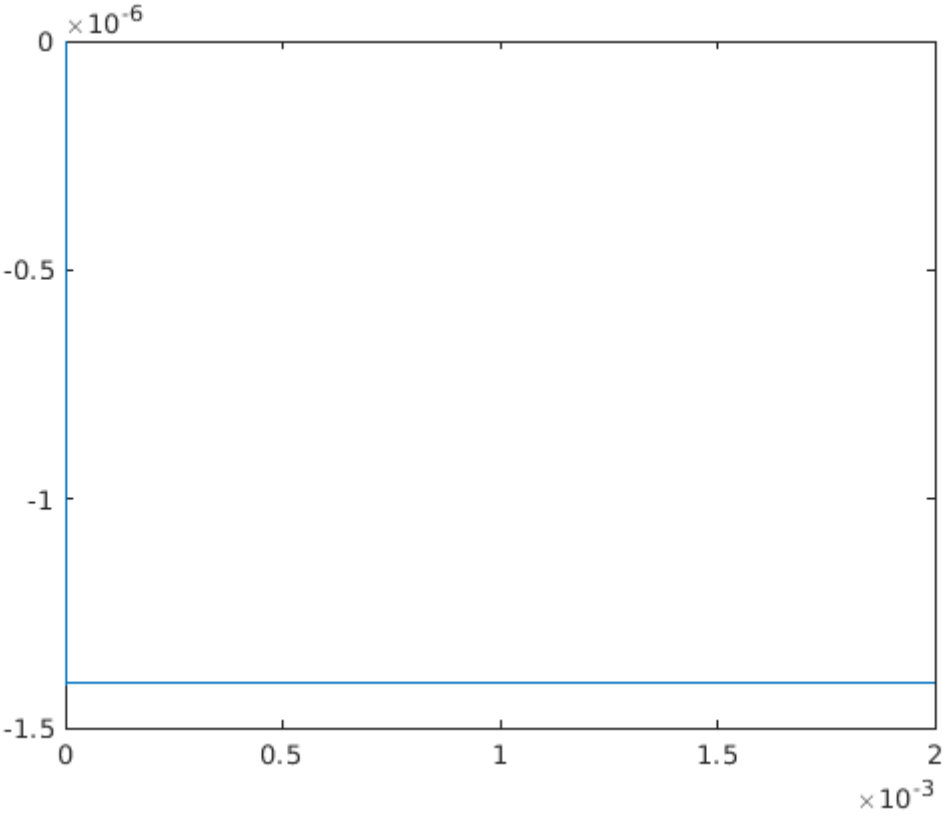

0.379289
0.3792885
0.379288
0.3792875
0
0.5
1
1.5
2
×10-3


×10-8
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
-1.4
-1.6
0
0.5
1
1.5
2
×10-3


×10^-8
-1.53
-1.535
-1.54
-1.545
-1.55
-1.555
-1.56
-1.565
0
0.5
1
1.5
2
2.5
×10^-4


1.24791002
1.247910018
1.247910016
1.247910014
1.247910012
1.24791001
1.247910008
1.247910006
1.247910004
1.247910002
1.24791
0
0.5
1
1.5
2
×10^-3


0.379289
0.3792885
0.379288
0.3792875
0
0.5
1
1.5
2
×10-3


×10-6
0
-0.5
-1
-1.5
0
0.5
1
1.5
2
×10-3