

12020/Phys 512/Assignments/A1

variable explorer

Name	Value
dx_brst	6.6065089860019918241
dx_brst2	6.38685411419875572
dx_pred	6.6011768798225146731
dx_pred2	6.31360798225146734
dxs	[1.88888888e-15 2.1285885e-4 7.1 ...]
srr	[7.32155905e-82 2.94671281e-2 8.0 ...]

Help Variable explorer File explorer Breakpoints

Python console

IPython 7.6.1 -- an enhanced Interactive Python.

Pasting to repl...

```

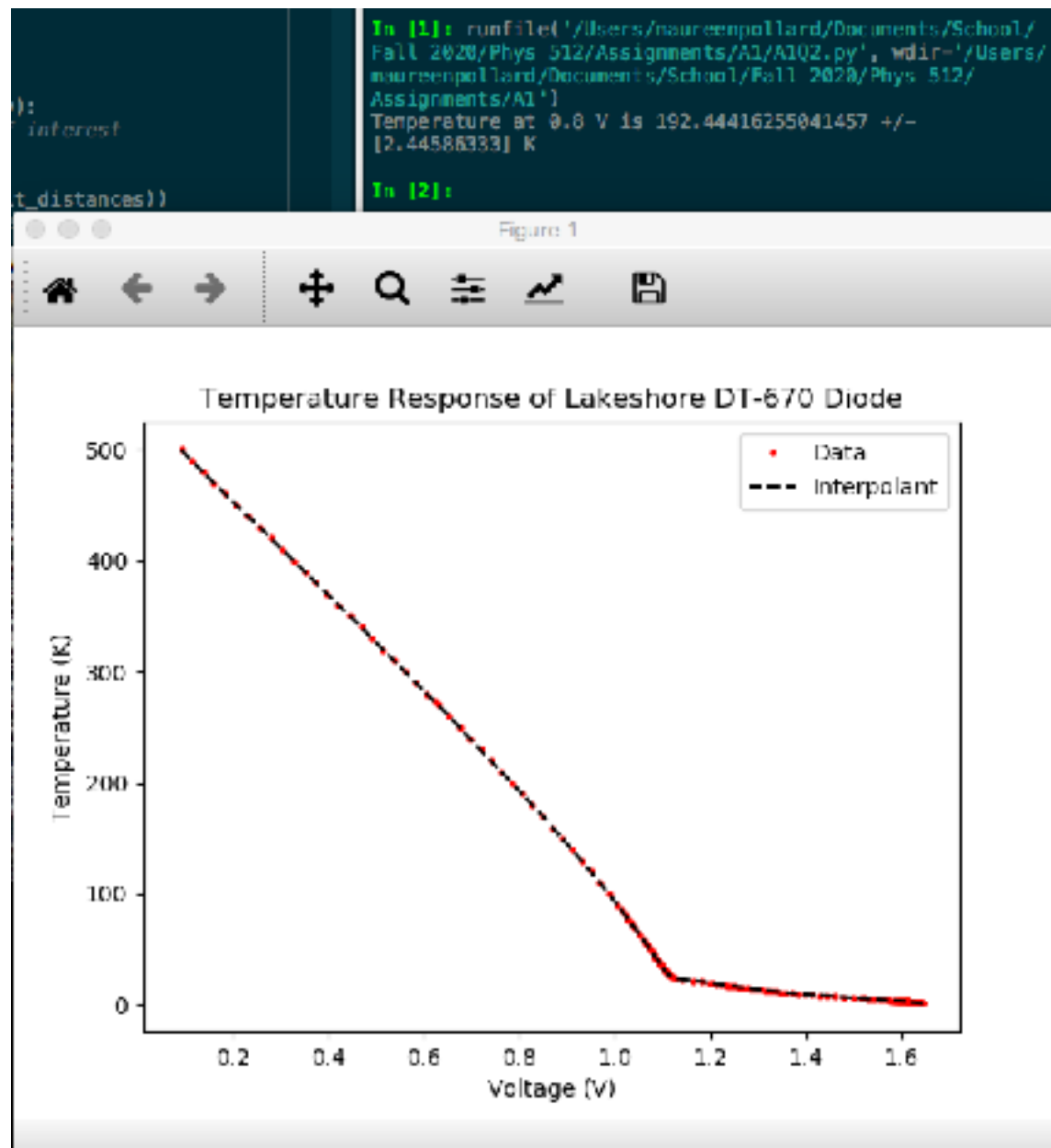
In [11]: runfile('Users/maureenpellard/Documents/School/Fall 2020/Phys 512/Assignments/A1/a1013.py', wdir='Users/maureenpellard/Documents/School/Fall 2020/Phys 512/Assignments/A1')
Results for a = 1:
Predicted Optimal dx: 6.6011768798225146731
Found Optimal dx: 6.6065089860019918241
Results for a = 0.01:
Predicted Optimal dx: 6.31360798225146734
Found Optimal dx: 6.38685411419875572

```

IPython console History log

log: UTF-8 Line: 18 Column: 1 Memory: 74 %

A1Q1



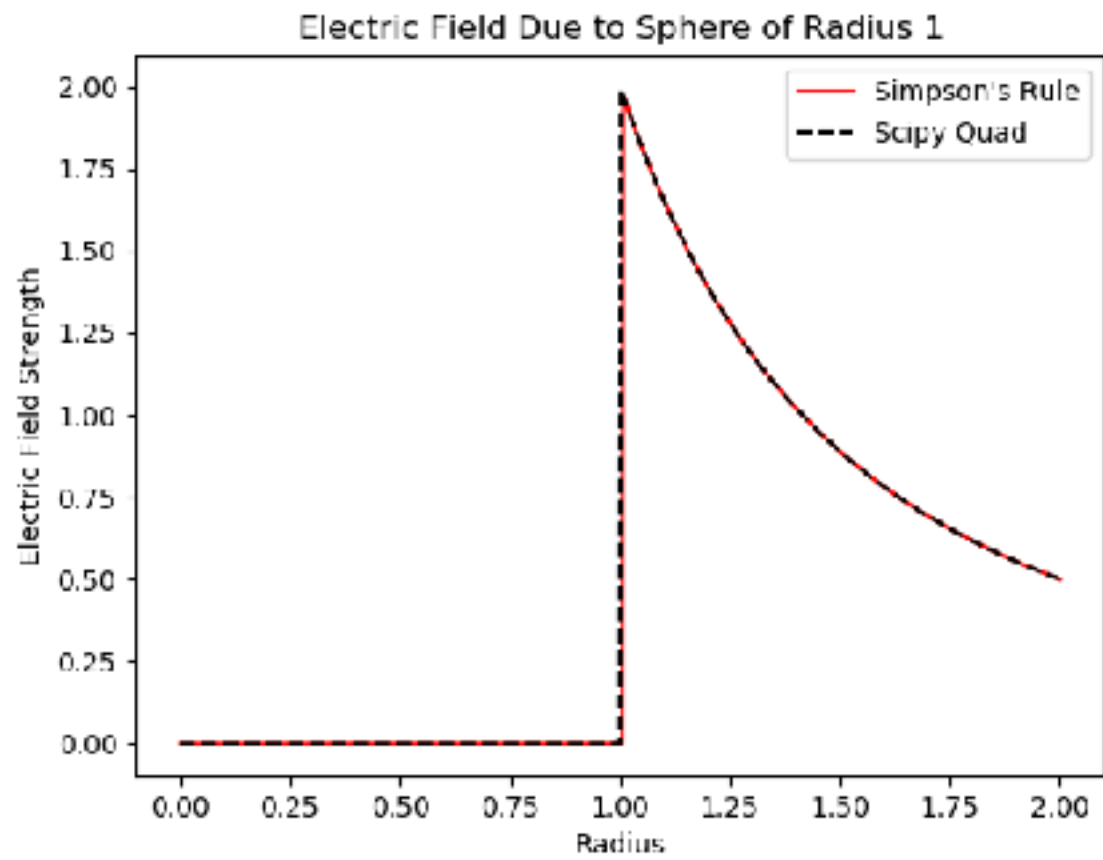
A1Q2

Name	A	Type	Size	Value
cos_true		float64	(1000,)	[6.12323400e-17 3.14473221e-03 6.28943332e-03 ... 6.28943332e-03 3.14 ...]
err_ci_C		float64	1	0.00014678861487177808
err_ci_L		float64	1	0.000516277822833635
err_poly_C		float64	1	0.0006028392882912722
err_poly_L		float64	1	0.00284773225602917
err_fit_C		float64	1	2.4206198118792763e-05
err_fit_L		float64	1	1.1824644802172654
f_C		float64	(8,)	[6.12323400e-17 4.33883739e-01 7.81331482e-01 9.74927912e-01 0.749279 ...]
f_L		float64	(8,)	[0.5 0.66216215 0.84482759 0.98 0.98 0.3448759 0. ...]
lorentz_true		float64	(1000,)	[0.5 0.501002 0.50200601 ... 0.50200601 0.501002 0.5 ...]
m		int	1	5
n		int	1	4
p_C		float64	(4,)	[ 9.99910993e-01 0.00000000e+00 -4.03261085e-01 -2.84217094e-14]
p_L		float64	(4,)	[ 2.20712007 5. 7. -2.00449214]
poly_C		float64	(9,)	[-2.50216902e-03 -2.24512554e-17 9.29670929e-03 7.02726908e-16 2.9 ...]
poly_L		float64	(9,)	[-2.69800593e-01 1.34719060e-14 1.88540143e-01 -9.13717799e-15 5.2 ...]
q_C		float64	(4,)	[5.68434189e-14 5.45089878e-02 0.00000000e+00 6.23367409e-33]
q_L		float64	(4,)	[ 6. 9. -4.5 8. ]
x_true_C		float64	(1000,)	[-1.57079633 -1.56765159 -1.56450685 ... 1.56450685 1.56765159 1.5 ...]
x_true_L		float64	(1000,)	[-1. -0.997998 -0.995996 ... 0.995996 0.997998 1. ]
x_C		float64	(8,)	[-1.57079633 -1.12199738 -0.67319843 -0.22439948 0.22439948 0.673198 ...]
x_L		float64	(8,)	[ -1. -0.71428571 -0.42857143 -0.14285714 0.14285714 0.428571 ...]

**A1Q3**  
(using  
inv)  
n=4,m=5

Name	A	Type	Size	Value
cos_true		float64	(1000,)	[6.12323400e-17 3.14473221e-03 6.28943332e-03 ... 6.28943332e-03 3.14 ...]
err_ci_C		float64	1	0.00014678861487177808
err_ci_L		float64	1	0.000516277822833635
err_poly_C		float64	1	0.0006028392882912722
err_poly_L		float64	1	0.00284773225602917
err_fit_C		float64	1	2.420619811879404e-05
err_fit_L		float64	1	1.0110672646423679e-15
f_C		float64	(8,)	[6.12323400e-17 4.33883739e-01 7.81331482e-01 9.74927912e-01 0.749279 ...]
f_L		float64	(8,)	[0.5 0.66216216 0.84482759 0.98 0.98 0.34482759 0. ...]
lorentz_true		float64	(1000,)	[0.5 0.501002 0.50200601 ... 0.50200601 0.501002 0.5 ...]
m		int	1	5
n		int	1	4
p_C		float64	(4,)	[ 9.99990995e-01 -2.84217094e-13 -4.01281085e-01 1.84217094e-14]
p_L		float64	(4,)	[ 1.00000000e+00 1.77635684e-15 -3.31333333e-01 0.00000000e+00]
poly_C		float64	(9,)	[-2.50216902e-03 -2.24512554e-17 9.29620929e-03 1.02726900e-16 2.9 ...]
poly_L		float64	(9,)	[-2.69800593e-01 1.34719060e-14 1.88540143e-01 -9.12717740e-15 5.2 ...]
q_C		float64	(4,)	[-2.04117014e-13 9.45089070e-02 -2.13162821e-14 6.23357401e-03]
q_L		float64	(4,)	[ 0.00000000e+00 6.66666667e-01 -1.71635684e-15 -1.32333333e-01]
x_true_C		float64	(1000,)	[-1.57079633 -1.56765159 -1.56450685 ... 1.56450685 1.56765159 1.5 ...]
x_true_L		float64	(1000,)	[-1. -0.997998 -0.995996 ... 0.995996 0.997998 1. ]
x_C		float64	(8,)	[-1.57079633 -1.12199738 -0.67319843 -0.22439948 0.22439948 0.673198 ...]
x_L		float64	(8,)	[-1. -0.71428571 -0.42857143 -0.14285714 0.14285714 0.428571 ...]

**A1Q3**  
(using pinv)  
n=4,m=5



A1Q4