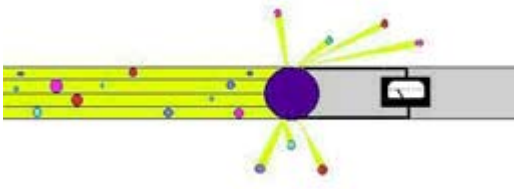
Names_____



Does Ohm's Law Apply to a Semiconductor?

http://quarknet.fnal.gov/projects/ohms/student/

Look at some of the test results and try to determine the following:

- Do silicon semiconductors obey Ohm's Law in general? Do they sometimes obey Ohm's Law? Exactly? Approximately?

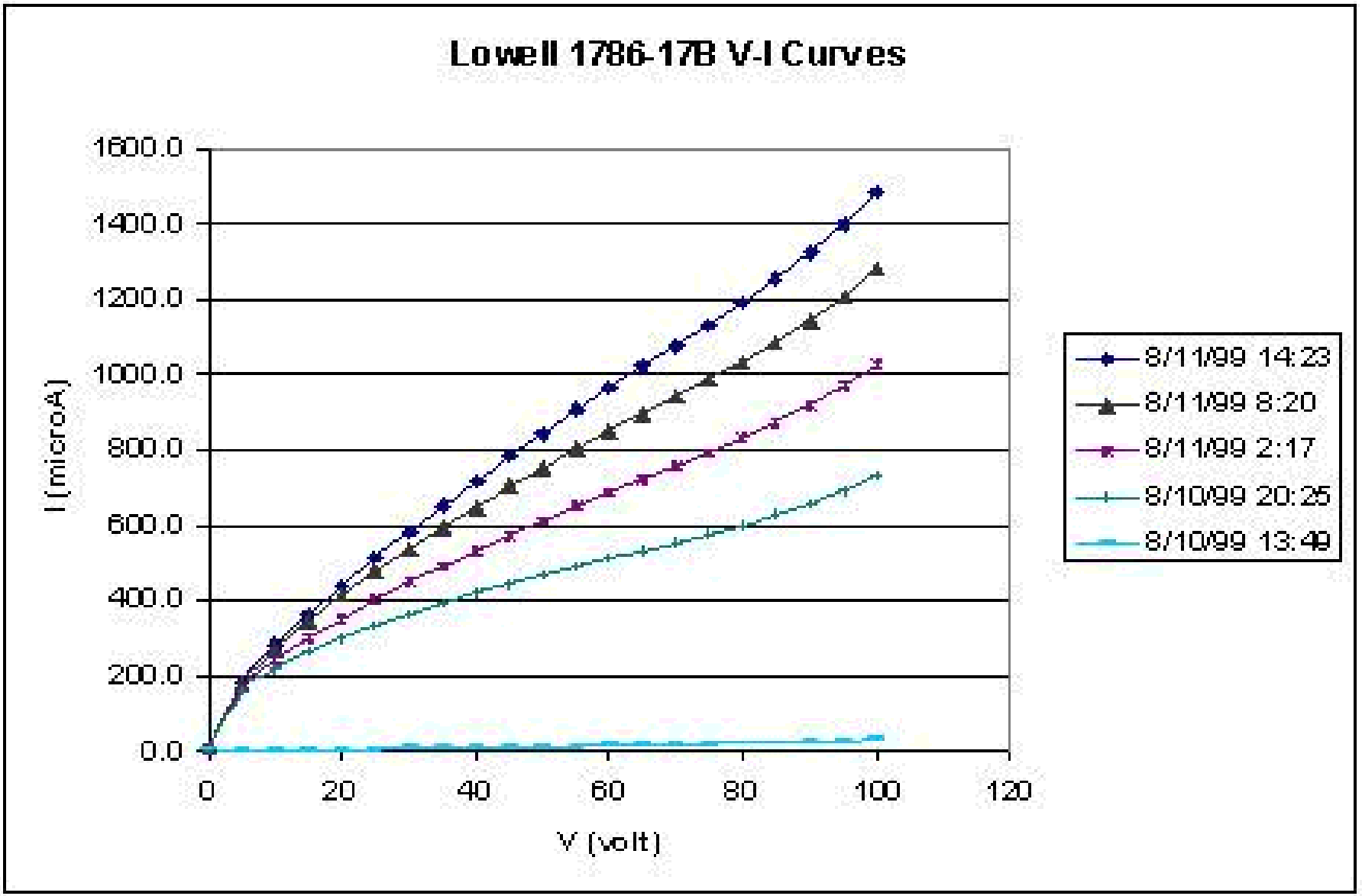
- Use Graphical Analysis to construct a graph and an equation to show the resistance R of a silicon strip as a function of the number of neutrons N incident upon that strip? Hint it's probably not one of the easy ones like linear, inverse or power.

- How does neutron radiation affect the resistance of a silicon strip?

- Why do you think neutron radiation affects the resistance of a silicon strip? How could your hypothesis be tested?

Explanation of the data: The number of incident neutrons on this detector varies, in approximately equal increments, from 0 at 13:49 on 8/10/99 to 13.9 x 1014 neutrons at the conclusion of the data run at 14:23 on 8/11/99. Thus the neutron bombardment for each run is given in the table below.

Date	**Time**	**Neutrons Incident**
8/10/99	13:49	0
8/10/99	20:25	3.5×10^{14}
8/11/99	2:17	7.0×10^{14}
8/11/99	8:20	10.4×10^{14}
8/11/99	14:23	13.9×10^{14}


Lowell 1786-17B V-I Curves
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
I (microA)
0
20
40
60
80
100
120
V (volt)
8/11/99 14:23
8/11/99 8:20
8/11/99 2:17
8/10/99 20:25
8/10/99 13:49