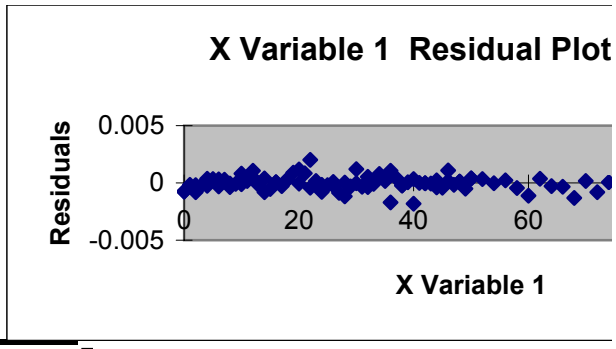
SUMMARY OUTPUT

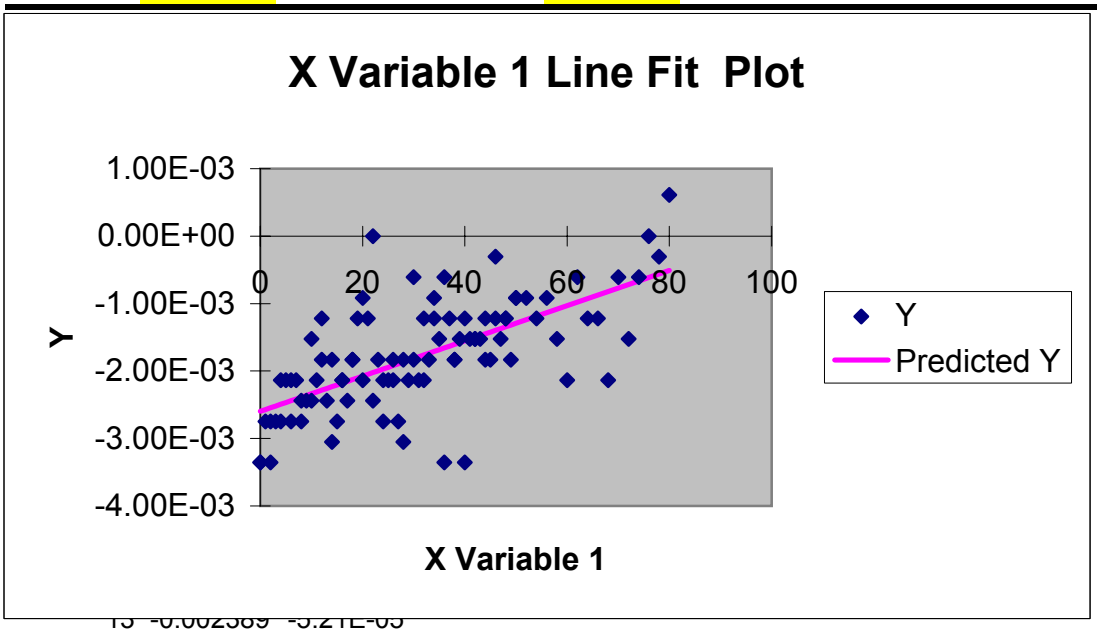
Regression Statistics	
Multiple R	0.657966
R Square	0.432919
Adjusted R	0.426618
Standard E	0.000623
Observatio	92



ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	2.66E-05	2.66E-05	68.70749	1.03E-12
Residual	90	3.49E-05	3.88E-07		
Total	91	6.15E-05			

	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	-0.002598	0.000119	-21.83391	9.99E-38	-0.002834	-0.002362	-0.002834	-0.002362
X Variable	2.61E-05	3.15E-06	8.288998	1.03E-12	1.98E-05	3.23E-05	1.98E-05	3.23E-05



13	-0.002389	-5.21E-05
14	-0.002389	-0.000357
15	-0.002363	-7.82E-05
16	-0.002337	-0.000104
17	-0.002337	0.000811
18	-0.002311	0.000175
19	-0.002285	0.001064
20	-0.002285	0.000454
21	-0.002259	-0.000183
22	-0.002233	0.000402
23	-0.002233	-0.000819
24	-0.002207	-0.00054
25	-0.002181	4.43E-05
26	-0.002181	4.43E-05
27	-0.002154	-0.000287

When analying dark current data, the first thing to do is ta
for the same gain and plot them on top of each other (see
Notice that since run 30 only went out to 10 degrees, the
greater than that of run 9 or 110. This is because dark cu
By doing a linear fit, we don't do justice to the line shape a
worried about dc at those angles anyway. Bottom line: I t
because it didn't have any info about the higher angles th

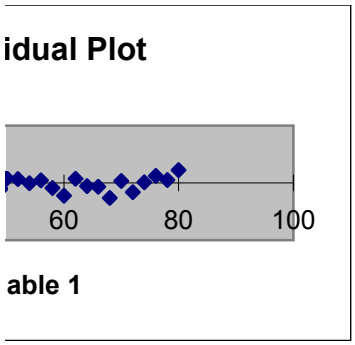
Now that you know what data you're actually interested in
see the data at right), then you take that data (just the ang
in the same column. Then in data, choose sort (ascendin
Now, in tools, go to add ins and select the data analysis t
choose "regression." Linear regression analysis is a way

28	-0.002128	0.000297
29	-0.002128	0.000297
30	-0.002102	0.000882
31	-0.002076	-6E-05
32	-0.002076	0.001161
33	-0.00205	0.000829
34	-0.002024	-0.000417
35	-0.002024	0.002024
36	-0.001998	0.000167
37	-0.001972	-0.000164
38	-0.001972	-0.000775
39	-0.001946	-0.00019
40	-0.00192	-0.000217
41	-0.00192	8.86E-05
42	-0.001894	-0.000853
43	-0.001867	-0.001184
44	-0.001867	3.64E-05
45	-0.001841	-0.000295
46	-0.001815	-1.58E-05
47	-0.001815	0.001205
48	-0.001789	-0.000347
49	-0.001763	-0.000373
50	-0.001763	0.000542
51	-0.001737	-9.4E-05
52	-0.001711	0.00049
53	-0.001711	0.000795
54	-0.001685	0.000159
55	-0.001659	0.001048
56	-0.001659	-0.001698
57	-0.001633	0.000412
58	-0.001607	-0.000224
59	-0.001607	-0.000224
60	-0.00158	5.46E-05
61	-0.001554	0.000334
62	-0.001554	-0.001803
63	-0.001528	2.44E-06
64	-0.001502	-2.36E-05
65	-0.001502	-2.36E-05
66	-0.001476	-4.97E-05
67	-0.00145	-0.000381
68	-0.00145	0.000229
69	-0.001424	-0.000407
70	-0.001398	0.000177
71	-0.001398	0.001093
72	-0.001372	-0.000154
73	-0.001346	0.000125
74	-0.001346	0.000125
75	-0.00132	-0.000511
76	-0.001294	0.000378
77	-0.001294	0.000378
78	-0.001241	0.000326
79	-0.001189	-3.15E-05

of data. In the dialog box, enter the data columns you'll u
Check the options residuals, residual plots, and line fit plo
will spit the results out to a new worksheet. The relevant
R-square tells you how well your data fits to a straight line
totally straight. F is a number that should be really big (se
small. Finally, your line fit is 2.61E-05*x - .0026.

When do you use/believe this? Well, first you want to be
your signal. The next thing to look at is how the noise in y
example, the variance in this dark current looks to be abo
(remember, the dark current is the noise). Now ask yours
in the places where it should theoretically go to zero? Yo
fitals, reflectance, and gnuplot in unix. That way you can
the data should be about the value of the dark current. If

80	-0.001137	0.000221
81	-0.001085	-0.000441
82	-0.001033	-0.001104
83	-0.00098	0.00037
84	-0.000928	-0.000292
85	-0.000876	-0.000345
86	-0.000824	-0.001312
87	-0.000772	0.000161
88	-0.00072	-0.000806
89	-0.000667	5.7E-05
90	-0.000615	0.000615
91	-0.000563	0.000258
92	-0.000511	0.001121



%

ake all the dark scans you have
e chart--- dc sc run 9,30,110)
slope of the linear fit is much
urrent is angularly dependent.
at lower angles, but we're not
threw out the data for run 30,
hat I care about.

n (in this case, runs 9 and 110--
gle and the signal), and plot it
ng). See col. U--gain nine regressi
tool pack. Once that is added,
/ of linearly fitting multiple sets

sc run 9 gain 9 theta scan			sc run 110 gain 9	
Saturday, March 15, 2003 01:28:43 AM			Saturday, March 15, 2(	
0	-3.36E-03	21.17	0.001	-3.36E-03
1	-2.75E-03	21.17	2	-2.75E-03
2	-3.36E-03	21.14	4	-2.14E-03
3	-2.75E-03	21.14	6	-2.14E-03
4	-2.75E-03	21.11	8	-2.75E-03
5	-2.14E-03	21.14	10	-1.53E-03
6	-2.75E-03	21.14	12	-1.83E-03
7	-2.14E-03	21.05	14	-3.05E-03
8	-2.44E-03	21.11	16	-2.14E-03
9	-2.44E-03	21.11	18	-1.83E-03
10	-2.44E-03	21.05	20	-9.16E-04
11	-2.14E-03	21.14	22	0.00E+00
12	-1.22E-03	21.08	24	-2.75E-03
13	-2.44E-03	21.11	26	-1.83E-03
14	-1.83E-03	21.08	28	-1.83E-03
15	-2.75E-03	21.05	30	-6.10E-04
16	-2.14E-03	21.08	32	-1.22E-03
17	-2.44E-03	21.05	34	-9.16E-04
18	-1.83E-03	21.05	36	-3.36E-03
19	-1.22E-03	21.05	38	-1.83E-03
20	-2.14E-03	21.05	40	-3.36E-03
21	-1.22E-03	21.02	42	-1.53E-03
22	-2.44E-03	21.05	44	-1.22E-03
23	-1.83E-03	21.08	46	-3.05E-04
24	-2.14E-03	21.02	48	-1.22E-03
25	-2.14E-03	21.05	50	-9.16E-04
26	-2.14E-03	21.02	52	-9.16E-04
27	-2.75E-03	20.99	54	-1.22E-03
28	-3.05E-03	21.02	56	-9.16E-04
29	-2.14E-03	20.99	58	-1.53E-03
30	-1.83E-03	20.99	60	-2.14E-03
31	-2.14E-03	20.96	62	-6.10E-04
32	-2.14E-03	20.96	64	-1.22E-03
33	-1.83E-03	20.96	66	-1.22E-03
34	-1.22E-03	20.93	68	-2.14E-03
35	-1.53E-03	20.93	70	-6.10E-04
36	-6.10E-04	20.93	72	-1.53E-03
37	-1.22E-03	20.9	74	-6.10E-04
38	-1.83E-03	20.93	76	0.00E+00
39	-1.53E-03	20.9	78	-3.05E-04
40	-1.22E-03	20.96	80	6.10E-04
41	-1.53E-03	20.84		
42	-1.53E-03	20.87		
43	-1.53E-03	20.87		
44	-1.83E-03	20.93		
45	-1.83E-03	20.87		
46	-1.22E-03	20.87		
47	-1.53E-03	20.9		
48	-1.22E-03	20.84		

ıse for x and y data.	49	-1.83E-03	20.84
ots. The regression analysis	50	-9.16E-04	20.9

numbers are highlighted in yellow.
e-- 0 means totally random, 1 means
everal hundred), and P should be really

sure that your dark current is smaller than
your reflectance compares to the noise in your dark current. For
out 1.5E-03. the noise in your reflectance should be about the same
self, if I subtract the dark current, will the reflectance go to zero
ou find this out by plotting the reflectance a la Matt and Dr. Turley's programs
compare the theoretical fit to the data, and where the theoretical curve goes to zero,
this is the case, then it makes sense to subtract dark current.

	gain nine regression	
)03 07:43:47 PM	(w/0 run 30)	
14.31	0	-3.36E-03
14.31	0.001	-3.36E-03
14.34	1	-2.75E-03
14.31	2	-3.36E-03
14.34	2	-2.75E-03
14.31	3	-2.75E-03
14.34	4	-2.75E-03
14.28	4	-2.14E-03
14.28	5	-2.14E-03
14.31	6	-2.75E-03
14.31	6	-2.14E-03
14.25	7	-2.14E-03
14.22	8	-2.44E-03
14.25	8	-2.75E-03
14.31	9	-2.44E-03
14.31	10	-2.44E-03
14.28	10	-1.53E-03
14.25	11	-2.14E-03
14.28	12	-1.22E-03
14.28	12	-1.83E-03
14.25	13	-2.44E-03
14.25	14	-1.83E-03
14.22	14	-3.05E-03
14.25	15	-2.75E-03
14.19	16	-2.14E-03
14.19	16	-2.14E-03
14.28	17	-2.44E-03
14.25	18	-1.83E-03
14.22	18	-1.83E-03
14.22	19	-1.22E-03
14.22	20	-2.14E-03
14.22	20	-9.16E-04
14.19	21	-1.22E-03
14.16	22	-2.44E-03
14.22	22	0.00E+00
14.19	23	-1.83E-03
14.22	24	-2.14E-03
14.19	24	-2.75E-03
14.16	25	-2.14E-03
14.16	26	-2.14E-03
14.16	26	-1.83E-03
	27	-2.75E-03
	28	-3.05E-03
	28	-1.83E-03
	29	-2.14E-03
	30	-1.83E-03
	30	-6.10E-04
	31	-2.14E-03
	32	-2.14E-03

32	-1.22E-03
33	-1.83E-03
34	-1.22E-03
34	-9.16E-04
35	-1.53E-03
36	-6.10E-04
36	-3.36E-03
37	-1.22E-03
38	-1.83E-03
38	-1.83E-03
39	-1.53E-03
40	-1.22E-03
40	-3.36E-03
41	-1.53E-03
42	-1.53E-03
42	-1.53E-03
43	-1.53E-03
44	-1.83E-03
44	-1.22E-03
45	-1.83E-03
46	-1.22E-03
46	-3.05E-04
47	-1.53E-03
48	-1.22E-03
48	-1.22E-03
49	-1.83E-03
50	-9.16E-04
50	-9.16E-04
52	-9.16E-04
54	-1.22E-03
56	-9.16E-04
58	-1.53E-03
60	-2.14E-03
62	-6.10E-04
64	-1.22E-03
66	-1.22E-03
68	-2.14E-03
70	-6.10E-04
72	-1.53E-03
74	-6.10E-04
76	0.00E+00
78	-3.05E-04
80	6.10E-04