A set of flatfield images were taken with exposure times ranging from 3-540 s.

|  |  |  |
| --- | --- | --- |
| Image number | Exposure time (s) | Average counts/pixel |
| 1 | 3 | 3245 |
| 2 | 6 | 3500 |
| 3 | 12 | 4016 |
| 4 | 24 | 5033 |
| 5 | 48 | 7062 |
| 6 | 96 | 11128 |
| 7 | 192 | 19378 |
| 8 | 384 | 35511 |
| 9 | 540 | 48028 |
| 10 | 540 | 47903 |
| 11 | 462 | 42158 |
| 12 | 384 | 35392 |
| 13 | 288 | 27460 |
| 14 | 192 | 19262 |
| 15 | 144 | 15288 |
| 16 | 96 | 11166 |
| 17 | 72 | 9118 |
| 18 | 48 | 7062 |
| 19 | 36 | 6068 |
| 20 | 24 | 5047 |
| 21 | 18 | 4532 |
| 22 | 12 | 4021 |
| 23. | 9 | 3757 |
| 24 | 6 | 3500 |
| 25 | 3 | 3241 |

**Table of data:**

The data was separated into 2 sections: one which only includes the images that had an average of *less than* 20,000 counts/pixel, and another section that only includes the images that had an average of *greater than* 20,000 counts per pixel. The python “scipy.optimize.curve\_fit” function was used to calculate the optimal parameters for a line of best fit in each of the 2 sections of images.

**-Images with an average of *less than* 20,000 counts/pixel:**

* Best fit line parameters: slope= 84.9, y-intercept=2997.3

The following plot shows all of the data points, with a line of best fit calculated from the images with *less than* 20,000 counts/pix:



**-Images with an average of *greater than* 20,000 counts/pixel:**

* Best fit line parameters: slope= 80.2, y-intercept=4737.7

The following plot shows all of the data points, with a line of best fit calculated from the images with *greater than* 20,000 counts/pix:

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The counts/pixel increases approximately linearly with exposure time, although it does begin to flatten a bit as the counts/pixel increases past 20,000.