

## EXPERIMENT

Spectrum Name:
Description:
Student ID:
Detector:
Comments:

Start Time: February 07, 2023, 08:23:21 End Time: February 07, 2023, 08:24:22

## SET UP

Acquisition Mode: PHA Pre-Amp High Voltage: 800 Conversion Gain: 1024 Coarse Gain: 8 Fine Gain: 1.24

Upper Discriminator: 1048 Channels Lower Discriminator: 14 Channels

Live Time: 60.33 Real Time: 60.96 Percent Dead: 1.03

## REGIONS OF INTEREST: Not Calibrated

| ROI Start | ROI End | Gross | Net   | Centroid | FWHM |
|-----------|---------|-------|-------|----------|------|
| 19        | 28      | 4616  | 1815  | 22       |      |
| 42        | 62      | 3436  | 663   | 51       | 6    |
| 370       | 452     | 16865 | 16324 | 410      | 28   |

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10: 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 121 |
20: 1102 | 1008 | 675 | 555 | 351 | 260 | 220 | 159 | 165 | 140 |
30: 116 | 125 | 136 | 138 | 139 | 134 | 118 | 135 | 114 | 140 |
40: 119 | 133 | 141 | 170 | 166 | 202 | 234 | 210 | 209 | 188 |
50: 158 | 177 | 176 | 147 | 156 | 160 | 164 | 137 | 138 | 148 |
60: 116 | 124 | 115 | 112 | 96 | 106 | 130 | 144 | 119 | 108 |
70: 107 | 111 | 102 | 113 | 141 | 127 | 114 | 108 | 130 | 123 |
80: 118 | 82 | 120 | 147 | 118 | 130 | 126 | 131 | 143 | 122 |
90: 117 | 116 | 108 | 119 | 121 | 104 | 126 | 133 | 136 | 114 |
100: 117 | 133 | 127 | 132 | 115 | 132 | 120 | 107 | 109 | 123 |
110: 143 | 120 | 129 | 131 | 122 | 146 | 143 | 144 | 163 | 145 |
120: 148 | 152 | 192 | 151 | 134 | 159 | 163 | 162 | 157 | 163 |
130: 160 | 150 | 163 | 148 | 140 | 150 | 140 | 166 | 138 | 157 |
140: 139 | 144 | 158 | 153 | 144 | 139 | 157 | 130 | 148 | 134 |
150: 148 | 128 | 130 | 145 | 147 | 147 | 138 | 126 | 137 | 136 |
160: 133 | 114 | 146 | 131 | 127 | 138 | 133 | 131 | 119 | 98 |
170: 121 | 121 | 115 | 131 | 102 | 119 | 137 | 101 | 134 | 128 |
180: 116 | 121 | 125 | 104 | 116 | 114 | 121 | 134 | 130 | 109 |
190: 106 | 129 | 110 | 100 | 96 | 108 | 131 | 103 | 99 | 100 |
200: 114 | 114 | 108 | 96 | 103 | 106 | 114 | 119 | 106 | 110 |
210: 108 | 101 | 110 | 97 | 110 | 94 | 112 | 108 | 80 | 86 |
220: 105 | 117 | 107 | 119 | 100 | 96 | 112 | 84 | 115 | 85 |
230: 105 | 102 | 114 | 104 | 100 | 109 | 84 | 103 | 100 | 114 |
240: 98 | 107 | 95 | 96 | 85 | 103 | 107 | 90 | 118 | 109 |
250: 101 | 99 | 107 | 98 | 94 | 98 | 96 | 102 | 98 | 91 |
260: 107 | 113 | 92 | 115 | 113 | 105 | 117 | 104 | 101 | 104 |
270: 109 | 125 | 88 | 88 | 82 | 123 | 96 | 113 | 110 | 114 |
280: 94 | 113 | 100 | 114 | 90 | 87 | 72 | 87 | 70 | 71 |
290: 66 | 89 | 63 | 76 | 61 | 68 | 54 | 60 | 49 | 50 |
300: 38 | 34 | 37 | 42 | 33 | 25 | 30 | 26 | 31 | 22 |
310: 21 | 29 | 29 | 35 | 21 | 40 | 30 | 21 | 24 | 17 |
320: 22 | 27 | 21 | 18 | 22 | 14 | 20 | 18 | 19 | 16 |
330: 20 | 13 | 14 | 5 | 16 | 13 | 13 | 19 | 12 | 11 |
340: 12 | 10 | 13 | 7 | 14 | 10 | 10 | 4 | 17 | 11 |
350: 8 | 17 | 10 | 9 | 12 | 5 | 9 | 10 | 5 | 16 |
360: 14 | 9 | 10 | 8 | 10 | 8 | 10 | 12 | 11 | 12 |
370: 12 | 13 | 14 | 19 | 13 | 16 | 21 | 19 | 19 | 25 |
380: 35 | 36 | 39 | 53 | 68 | 61 | 65 | 75 | 94 | 120 |
390: 149 | 145 | 176 | 197 | 177 | 233 | 270 | 272 | 331 | 354 |
400: 398 | 386 | 398 | 447 | 474 | 509 | 491 | 523 | 588 | 510 |
410: 566 | 575 | 546 | 528 | 552 | 519 | 480 | 469 | 431 | 390 |
420: 408 | 407 | 338 | 330 | 303 | 269 | 278 | 213 | 218 | 184 |
430: 156 | 137 | 116 | 112 | 95 | 69 | 56 | 55 | 43 | 41 |
440: 27 | 21 | 16 | 21 | 14 | 9 | 10 | 5 | 3 | 1 |
450: 1 | 4 | 4 | 0 | 1 | 3 | 1 | 2 | 0 | 0 |
460: 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
470: 1 | 1 | 1 | 0 | 3 | 1 | 3 | 1 | 1 | 1 |
480: 1 | 1 | 4 | 0 | 0 | 3 | 3 | 3 | 0 | 1 |
490: 0 | 0 | 1 | 1 | 2 | 2 | 1 | 0 | 0 | 0 |
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| 510:         1         1         0         1         2         1         1         1         1         0         1         0         1         0         1         1         1         1         1         0         1 | 500: | 1 | ı | 1 | ı | 4 | ı | 1 | ı | 0 | ı | 1 | ı | 2 | ı | 1 | ı | 0 | ı | 0 | ı |
|--|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 530:         0         0         1 | 510: | 1 | ı | 2 | ı | 0 | ı | 2 | Ι | 2 | ı | 1 | ı | 1 | ı | 1 | ī | 0 | Ι | 0 | ı |
| 530:         0         1         1         1         1         1         2         1         0         1 | 520: | 1 | İ | 0 | i | 0 | i | 0 | i | 1 | İ | 0 | i | 2 | İ | 3 | i | 0 | i | 1 | Ì |
| 540:         0         0         0         1         1         1         2         1         2         1 | 530: | 0 | İ | 0 | i | 1 | i | 1 | i | 2 | İ | 0 | i | 3 | İ | 1 | i | 0 | i | 1 | Ì |
| 550:         0         1         2         1         1         1         1         1         0         1         2         1         0         1         1         1         0         1         1         1         0         1         1         0         1         1         1         0         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1 | 540: | 0 | i | 0 | i | 0 |   | 0 | i | 1 |   | 1 |   |   | i | 2 | i | 0 | i | 0 |   |
| 560: 1   2   1   2   1   2   0   0   0   0   1   1   0   2   1   570: 1   1   1   0   1   1   0   1   1   0   1   1  | 550: |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 570: 1   |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 580:         0         1         1         2         0         1         1         0         0         1         2         2         1         3         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         1         0         1         1         0         1         1         0         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0         1         0 |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 590:         0         1         1         0         0         0         1         1         0         1         0         1         1         0         1         1         1         0         1         0         1         1         0         1         1         0         1         1         0         1         1         0         1         1         0         1         1         0         1         1         1         0         1         1         1         0         1         1         1         0 |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 600: 0   1   0   0   0   2   0   0   0   0   1   3   610: 2   1   1   0   1   0   1   1   0   1   0   1   1  |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 610: 2   1   0   1   1   0   1   1   0   0   0   |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 620: 1   0   0   1   1   1   0   0   1   1   |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 630: 0   2   0   0   0   5   1   0   0   0   0   0   0   0   0   640: 0   1   1   0   1   1   1   1   1   1  | 620: | 1 | i | 0 | i | 0 |   |   | i | 1 | i | 0 |   |   |   | 3 | i | 0 |   | 0 |   |
| 640: 0   | 630: | 0 | i | 2 | i | 0 |   | 0 | i | 5 | i | 1 |   | 0 |   | 0 | i | 0 | i | 0 |   |
| 650: 0   0   0   1   1   1   1   0   1   1   | 640: | 0 | i | 1 | i | 0 |   |   | i | 1 |   | 0 |   | 0 |   | 1 | i | 0 | i | 1 |   |
| 660: 4   1   1   1   1   1   3   0   1   1   3   4   3   3   670: 0   2   1   1   2   0   0   0   0   1   1   3   4   3   3   670: 0   0   2   1   1   2   0   0   0   0   0   2   2   3   3   3   3   680: 0   0   0   4   0   0   2   0   1   1   2   0   0   1   1   1   1   690: 1   0   0   4   0   0   2   0   0   1   1   1   1   1   1   1   1   | 650: | 0 | i | 0 | i | 0 |   |   | i | 1 | i | 0 |   |   |   | 0 | i | 2 | i | 1 |   |
| 670: 0   2   1   1   2   0   0   0   2   2   3   3   3   3   680: 0   0   0   4   0   0   2   1   1   2   0   0   1   2   1   1   1   1   1   1   1   1  |      | 4 | i | 1 | i | 1 |   |   |   | 3 |   | 0 |   |   |   | 3 | i | 4 |   | 3 |   |
| 680: 0   0   0   4   0   2   1   1   2   0   1   1   1   1   690: 1   1   0   2   1   0   3   2   1   1   2   0   1   1   1   0   1   1   1   1   690: 1   1   0   1   2   1   0   1   3   1   0   1   1   1   1   1   1   1   1   | 670: | 0 | i | 2 | i | 1 |   |   | i | 0 | i | 0 |   |   |   |   | i | 3 |   | 3 |   |
| 700: 0   1   1   1   3   0   0   0   1   1   1   2   1   1   7   7   7   7   7   7   7   7   | 680: | 0 | i | 0 | i | 4 |   | 0 | i | 2 | i | 1 |   | 2 |   | 0 |   | 1 | i | 1 |   |
| 710: 3   0   0   0   1   1   0   1   1   1   1   | 690: | 1 | i | 0 | Ì | 2 | i | 0 | i | 3 | i | 2 | Ì | 1 | i | 1 | i | 0 | i | 1 | Ì |
| 720: 0   0   1   1   0   1   1   0   1   1   | 700: | 0 | Ì | 1 | Ì | 1 | Ì | 3 | Ī | 0 | Ì | 0 | Ì | 0 | Ì | 1 | Ì | 2 | Ì | 1 | Ì |
| 730: 0   0   1   1   0   0   0   1   1   0   0   | 710: | 3 | 1 | 0 | ı | 0 | 1 | 0 | 1 | 1 | 1 | 0 | ı | 1 | 1 | 1 | 1 | 1 | 1 | 0 |   |
| 740: 0   0   0   0   0   0   0   0   0   0   | 720: | 0 | 1 | 0 | ı | 1 | 1 | 0 | 1 | 1 | 1 | 0 | ı | 0 | 1 | 0 | 1 | 1 | 1 | 0 |   |
| 750: 0   0   1   1   1   0   1   1   | 730: | 0 | 1 | 0 | ı | 1 | 1 | 0 | 1 | 0 | 1 | 1 | ı | 0 | 1 | 0 | 1 | 0 | 1 | 0 |   |
| 760: 0   0   1   1   0   0   1   1   0   0   | 740: | 0 | 1 | 0 | 1 | 0 | ı | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |   |
| 770: 0   0   0   0   0   0   0   1   1   1   | 750: | 0 | 1 | 0 | 1 | 1 | 1 | 0 |   | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 780:         0   1   1   1   1   1   0   0   0   1   1   | 760: | 0 | 1 | 0 | 1 | 1 | 1 | 0 |   | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 2 | 1 | 1 | 1 |
| 790:         0   0   0   0   0   0   0   0   0   0   | 770: | 0 | 1 | 0 | 1 | 0 |   | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |   |
| 800: 0   0   0   1   1   1   1   0   2   0   1   1   0   8   8   1   1   0   0   0   0   0   0   0   0   | 780: | 0 | 1 | 1 | 1 | 1 |   | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |   |
| 810: 1   0   0   0   0   0   0   0   0   0   | 790: | 0 |   | 0 |   | 0 | 1 | 0 |   | 0 |   | 0 |   | 1 |   | 0 | 1 | 0 |   | 0 |   |
| 820:         1   0   0   0   0   0   0   0   0   0   | 800: | 0 |   | 0 |   | 0 |   | 1 |   | 1 |   | 0 |   | 2 |   | 0 | 1 | 1 |   | 0 |   |
| 830:         0         1 | 810: | 1 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 1 | 1 | 0 |   | 1 |   |
| 840: 1   0   0   0   0   0   0   0   1   0   0   | 820: | 1 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 1 |   | 1 | 1 | 0 |   | 2 |   |
| 850:         0   0   0   0   0   0   0   1   0   1   0   0   | 830: | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 | 1 | 0 |   | 0 |   |
| 860:       0               0               0               0               1       1       1       1       1       0               0               0               0               1       1       1       1       1       0           | 840: | 1 | 1 | 0 | 1 | 0 |   | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |   |
| 870: 0   2   2   0   0   0   0   0   0   0   | 850: | 0 |   | 0 |   | 0 | 1 | 0 |   | 1 |   | 0 |   | 0 |   | 0 | 1 | 0 |   | 0 |   |
| 880:       0       0       0       2       0       0       0       0       0       0       1       0   | 860: | 0 | 1 | 0 | - | 0 |   | 0 |   | 0 | 1 | 1 | - | 1 | 1 | 0 | 1 | 0 | - | 0 | - |
| 890:       0   | 870: | 0 | 1 | 2 | - | 2 |   | 0 |   | 0 | 1 | 0 | - | 0 | 1 | 0 | 1 | 0 | - | 1 | - |
| 900: 0   0   0   0   0   1   0   1   0   0   | 880: | 0 | 1 | 0 | - | 2 |   | 0 |   | 0 | 1 | 0 | - | 0 | 1 | 0 | 1 | 1 | - | 0 | - |
| 910: 0   0   0   0   0   0   0   0   0   0   | 890: | 0 |   | 0 |   | 0 | 1 | 0 |   | 0 |   | 0 |   | 0 |   | 0 | 1 | 0 |   | 0 |   |
| 920: 0   0   1   1   1   0   0   0   0   0   | 900: | 0 |   | 0 |   | 0 | 1 | 0 |   | 1 |   | 0 |   | 0 |   | 0 | 1 | 1 |   | 0 |   |
| 930: 0   0   0   0   0   0   0   0   0   0   | 910: | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 1 |   | 0 |   | 0 |   | 0 |   | 0 | 1 |
| 940: 0   0   1   0   0   0   0   0   0   0   | 920: | 0 |   | 0 |   | 1 |   | 1 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 | 1 |
| 950: 0   0   0   0   0   0   0   0   0   0   | 930: | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 | 1 |
| 960: 0   0   0   0   0   0   0   0   0   0   | 940: | 0 | 1 | 0 | 1 | 1 |   | 0 |   | 0 | 1 | 0 | 1 | 0 | 1 | 0 |   | 0 | - | 0 |   |
| 970: 1   0   0   0   0   0   0   0   0   0   | 950: | 0 |   | 0 |   | 0 | 1 | 0 | 1 | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   |
| 980: 0   0   1   0   0   0   0   0   0   0   | 960: | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 | 1 |
|  | 970: | 1 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 | - | 0 | - |
| 990: 0   0   0   0   0   0   0   0   0   0   | 980: | 0 |   | 0 |   | 1 |   | 0 | 1 | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   |
|  | 990: | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   | 0 |   |

1020: 0 | 0 | 1 | 1 |