First XLEAP measurements

**Hall Probe measurements:**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4/11/2017 |  | **B & K vs Gap** | |  |  |  | Device temperature = 21.2 ±0.5C | | | |  |
|  | **SLAC** |  |  |  | **ANL** |  |  |  |  |  |  |
| **Gap** | **K** | **Beff** |  | **K** | **Beff** |  | **K** | **K/K(%)** |  | **Beff(G)** | **B/B(%)** |
| 8 | 52.685 | 16110 |  | 52.641 | 16107 |  | 0.044 | 0.1 |  | 3 | 0.0 |
| 9 | 49.321 | 15080 |  | 49.228 | 15063 |  | 0.093 | 0.2 |  | 17 | 0.1 |
| 10 | 46.386 | 14190 |  | 46.383 | 14193 |  | 0.003 | 0.0 |  | -3 | 0.0 |
| 12 | 41.484 | 12690 |  | 41.363 | 12657 |  | 0.121 | 0.3 |  | 33 | 0.3 |
| 15 | 35.816 | 10960 |  | 35.78 | 10949 |  | 0.036 | 0.1 |  | 11 | 0.1 |
| 16.2 | 33.982 | 10390 |  | 33.88 | 10367 |  | 0.102 | 0.3 |  | 23 | 0.2 |
| 20 | 29.221 | 8940 |  | 29.149 | 8919 |  | 0.072 | 0.2 |  | 21 | 0.2 |
| 25 | 24.685 | 7550 |  | 24.64 | 7539 |  | 0.045 | 0.2 |  | 11 | 0.1 |
| 30 | 21.352 | 6532 |  | 21.309 | 6520 |  | 0.043 | 0.2 |  | 12 | 0.2 |
| 40 | 16.764 | 5128 |  | 16.721 | 5116 |  | 0.043 | 0.3 |  | 12 | 0.2 |
| 50 | 13.696 | 4190 |  | 13.66 | 4181 |  | 0.036 | 0.3 |  | 9 | 0.2 |
|  |  |  |  |  |  |  |  |  |  |  |  |

Measurements after encoder change

5/10/2017 Device temperature = 20.8 ±0.5C

**SLAC SLAC - ANL**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Gap** | **K** | **K** | **K/K(%)** |  |  | **K** | **K/K(%)** |  |
| 8 | 52.769224 | 0.084224 | 0.2 |  |  | 0.128224 | 0.2 |  |
| 9 | 49.424089 | 0.103089 | 0.2 |  |  | 0.196089 | 0.4 |  |
| 10 | 46.471946 | 0.085946 | 0.2 |  |  | 0.088946 | 0.2 |  |
| 12 | 41.581296 | 0.097296 | 0.2 |  |  | 0.218296 | 0.5 |  |
| 15 | 35.879846 | 0.063846 | 0.2 |  |  | 0.099846 | 0.3 |  |
| 16.2 | 34.043898 | 0.061898 | 0.2 |  |  | 0.163898 | 0.5 |  |
| 20 | 29.258137 | 0.037137 | 0.1 |  |  | 0.109137 | 0.4 |  |
| 25 | 24.710099 | 0.025099 | 0.1 |  |  | 0.070099 | 0.3 |  |
| 30 | 21.366462 | 0.014462 | 0.1 |  |  | 0.057462 | 0.3 |  |
| 40 | 16.781911 | 0.017911 | 0.1 |  |  | 0.060911 | 0.4 |  |
| 50 | 13.702469 | 0.006469 | 0.0 |  |  | 0.042469 | 0.3 |  |

**Final Results**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Gap**  **(mm)** | **B1**  **(G)** | **K** | **J1X**  **(G-cm)** | **J2X**  **(kG-cm2)** | **J1Y**  **(G-cm)** | **J2Y**  **(kG-cm2)** | **b1**  **(G)** | **a1**  **(G)** | **b2**  **(G/cm)** | **a2**  **(G/cm)** | **b3**  **(G/cm2)** | **a3**  **(G/cm2)** |
| 8.0 | 16137 | 52.77 | 62 | 5 | -24 | 62 | -412 | -78 | 576 | 17 | 1328 | 733 |
| 9.0 | 15115 | 49.42 | 95 | 2 | 34 | 39 | -220 | 353 | 228 | -659 | 193 | 273 |
| 10.0 | 14213 | 46.47 | 154 | 12 | 190 | 33 | 931 | 558 | 704 | -76 | -721 | 277 |
| 12.0 | 12718 | 41.58 | 113 | 7 | 249 | 10 | 366 | -84 | 129 | 646 | -490 | 45 |
| 15.0 | 10975 | 35.88 | 165 | 15 | 343 | 5 | -581 | 549 | 174 | 620 | 801 | -29 |
| 16.2 | 10413 | 34.04 | 149 | 9 | 394 | 3 | -122 | 357 | 2 | -551 | 76 | -160 |
| 20.0 | 8950 | 29.26 | 137 | 15 | 430 | 14 | 233 | 467 | -121 | -321 | -135 | -365 |
| 25 | 7559 | 24.71 | 129 | 13 | 442 | 21 | 184 | 469 | 175 | -92 | -219 | -673 |
| 30 | 6536 | 21.37 | 147 | 20 | 471 | 35 | -472 | -255 | -50 | 167 | 514 | 130 |
| 40 | 5134 | 16.78 | 140 | 27 | 336 | 51 | -450 | -9 | -26 | -205 | 522 | -106 |
| 50 | 4192 | 13.70 | 137 | 19 | 303 | 48 | 140 | -388 | -76 | -112 | -152 | 776 |
| 180 | 730 | 2.38 |  |  |  |  |  |  |  |  |  |  |

All measurement data could be found at: V:\MET\MagServe\MagData\LCLS-II\Undulator\xLEAP\....