LCLS-II HXU Undulator Analysis Programs

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1. Hall probe scan

* “pid\_anal\_hxu.m” for single scans
* “pid\_anal\_hxu\_op.m” for many scans

If desired, long coils measurements can be made first, in order to correct the Hall probe scans. The long coil results file is given in the parameter file “pid\_anal\_hxu\_param.m”.

1. Long coil measurements

* “long\_coil\_anal.m” for on-axis measurements
* “long\_coil\_anal\_off\_axis.m” for off-axis measurements

1. Fit K vs gap

* “pid\_fit\_k\_hxu.m” takes the pid\_anal results and summarizes them for spline fits. It also calculates the gap that gives the commissioning K value of 2.335 and writes it to the data file.
* “pid\_fit\_k\_hyst\_hxu.m” takes pid\_anal results and summarizes them for spline fits as the gap is opening and as the gap is closing. It makes plots comparing the two.
* “pid\_fit\_k\_off\_axis\_hxu.m” summarizes the K value for off-axis measurements

1. Fit phase matching data

* “pid\_fit\_phase\_match\_hxu.m” takes pid\_anal results and summarizes the phase matching error as a function of gap for spline fits.

1. Fit Hall probe field integral data

* “pid\_fit\_i12xy\_hxu.m” takes pid\_anal results and summarizes the Hall probe field integrals for spline fits.
* “pid\_fit\_i12xy\_off\_axis\_hxu.m” summarizes the Hall probe field integrals for off-axis measurements