

Initial Quartz Alignment Run Plan

(following Septum/central-ray setup and VDC checkout)

*Setup

--beam and target conditions: 0.5 – 1uA, thin carbon target; 4 x 6 raster

--Detector and DAQ configuration: s0's and all quartz pmts at -2000 V (counting mode); setup scalers for all detectors—s0, s3, mains and A_Ts for each arm.

*Goal is to map shadows of quartz tiles in the VDC

Note: Absolute x and y positions will be based on the # of steps from the lower limit switch. Nominal starting positions will be preset with known number of steps; initial positions will be changed as needed to get rate in the main quartz scalers. Initial moves will also be made to ensure the x position is appropriate (i.e. not too close to pmt cathode).

--Align main quartz in transverse y direction:

--Scan in y and start with scalers. Write down scaler values at each position and make a quick profile plot. Position the quartz edge near the elastic peak, take a data run and analyze; use VDC to project tracks to quartz transport z location and determine y (and x) profile; then use quartz ADC cut and VDC projections to find the edge. Repeat for other edge.

--Move quartz into center of elastic peak (in y); take a data run and analyze it like above.

--Align main quartz in dispersive x direction:

--Move quartz in spectrometer x (toward back of hut) until scaler rate drops off (this locates the far end of the quartz (away from pmt). Write down scaler values and make quick profile plot. Position the quartz edge near the elastic peak, take a data run and repeat the same analysis procedure as was done for y.

--Now move the elastic peak ~ 6.10 cm ($= 2.6E-3/0.167/0.95$) inside the quartz; this requires a 8.63 cm move along spectrometer x (toward the front of hut); take data run and analyze it.

--Align rotation angle of main quartz:

--scan angle +/- 1 to 2 degrees; take data run at ~ 6 different angles and analyze.

--Set angle to optimal value; take a data run and analyze.

For A_T detectors: (can be done in parallel with main detectors to some degree)

--use last data run (after main quartz alignment) and project VDC tracks to z location of A_Ts; make xy scatter plot of projected hits; apply A_T ADC cut to show the quartz shadows.

--Determine movements needed to put quartz in center of respective spots; make moves and take data run and repeat above procedure.