IMAGING – ADDITIONAL NOTES FOR LSE/HUGHES GUN

The current for each aperture is different than for UMER. Measure each using current monitor.

LSE Station:

The phosphor screen, camera and software is different from the IMPERX we commonly use on UMER:

A. We use fast phosphor screen with about 3-4ns response/decay
B. We use a microchannel plate (MCP) gated intensified CCD (ICCD) camera (PIMAX2) which is capable of producing 16bit images (see: www.piacton.com for description of PIMAX2 camera)

We will examine two gun aperture settings

1) 25mA aperture (equivalent to 22mA aperture on UMER)
2) Five beamlet aperture

Pay attention to changes in beam current trace as a function of BIAS voltage: use: 30, 40, 45 V bias.

Perform beam imaging experiments

1) with camera gate > 100 ns
2) one case with short camera gate < 10 ns to get a time-resolved image

Imaging Procedure: Instructor will demonstrate camera turn on, software enable, gate mode enable

Student data acquisition:

1) SET Gates per exposure to 1
2) SET Gain to 1 (0-256 nonlinear)
3) SET Gate width (100ns nominal)
4) SET Gate delay (318ns nominal)
5) Check oscilloscope to see if gate overlaps Current Pulse
   If NOT adjust Gate width and/or Gate delay
6) Enable FOCUS MODE
7) Adjust camera lens focus ring to get well defined beam image
8) Adjust Gain, Gates per exposure to get about 5000 counts in center of image
9) STOP FOCUS MODE
10) ENABLE ACQUISTION MODE
11) SAVE image as 8 bit TIFF in directory USPAS_STUDENT_IMAGES and DOWNLOAD TO MEMORY STICK for processing