

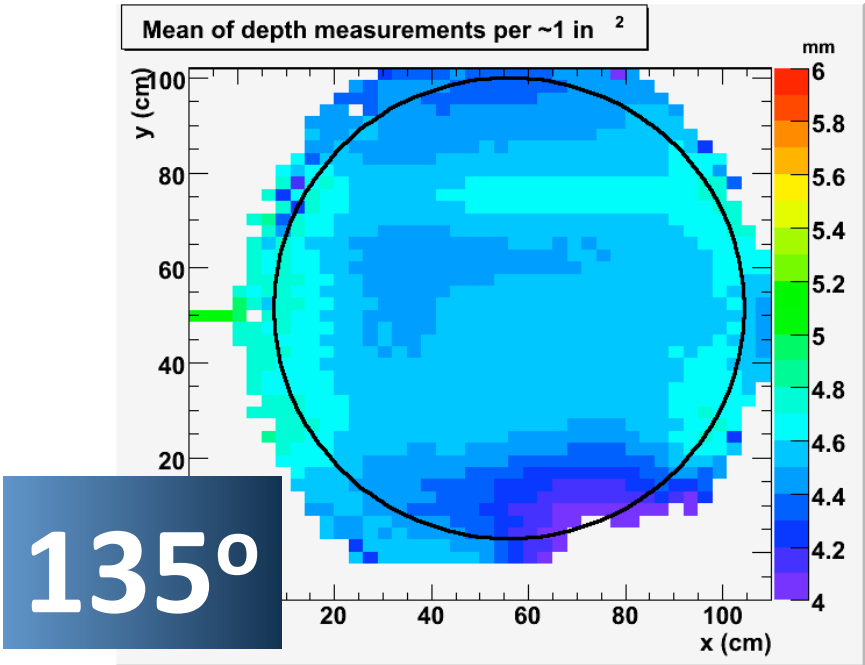
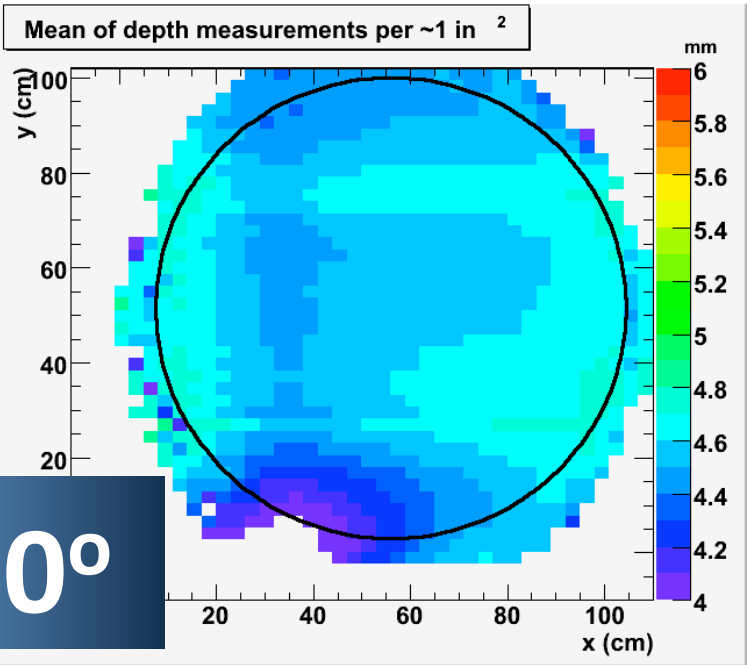
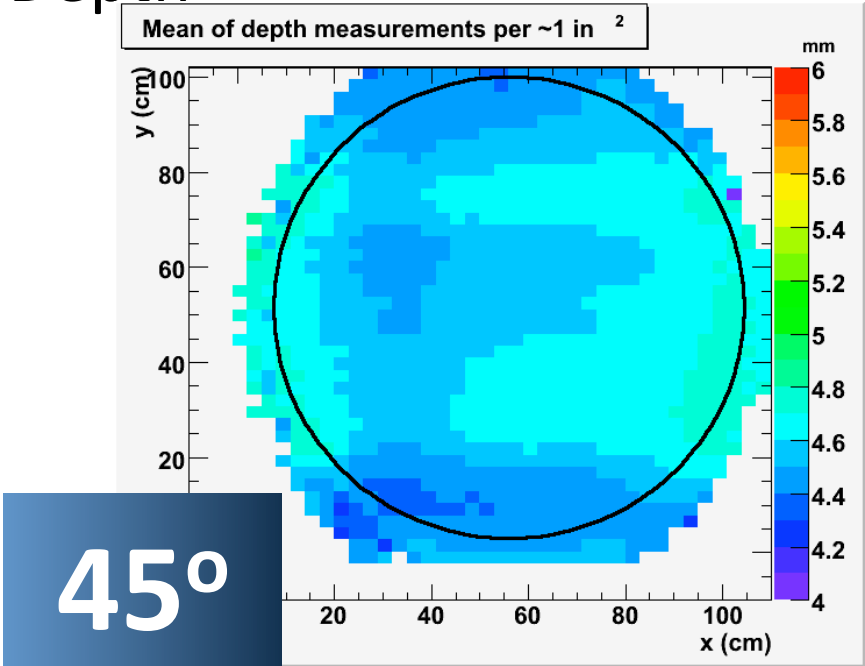
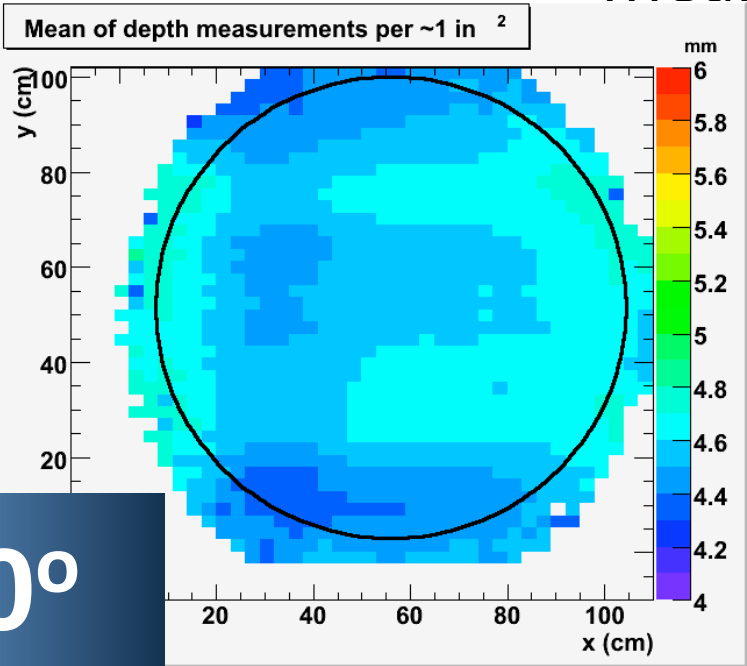
Status of FDC Laser Scanner System

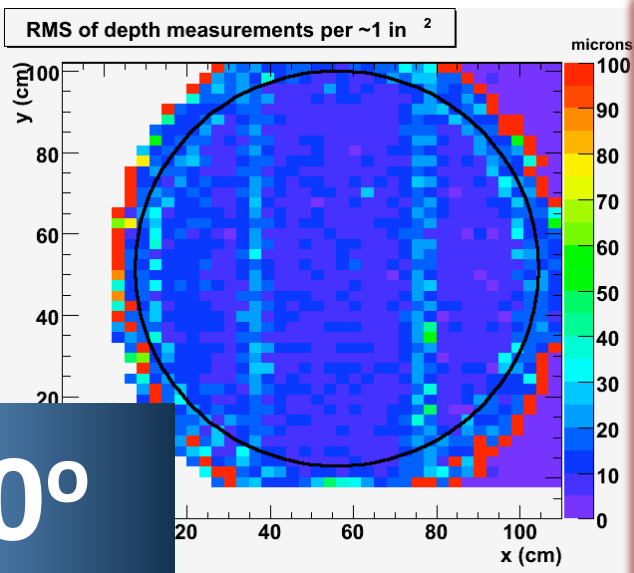
Dec. 11, 2008

Micah Veilleux CNU

David Lawrence JLab

Mean Depth





0°

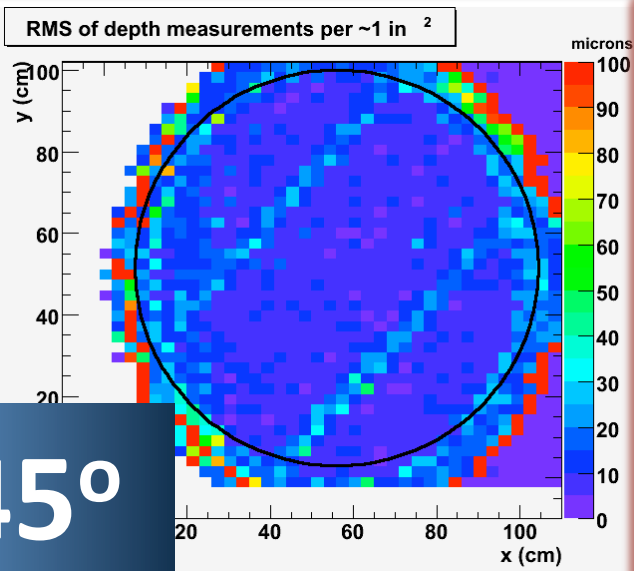
```

=====
Report for "plane004 000deg 2008_12_10 14_50_31.root"
-----
Active area radius used: 48.5 cm
Cathode center used: x=56 cm   y=51.5 cm

Values below reported for active area only:

mean depth: 4.56524 mm
min. depth: 4.33818 mm      location: x=-19.5 y=-42.4091
max. depth: 4.74582 mm      location: x=-40.5 y=23.7727
    range: 407.636 microns
    mean RMS: 11.7349 microns
    min. RMS: 3.27777 microns      location: x=25.5 y=-22.0455
    max. RMS: 57.1745 microns      location: x=22.5 y=-16.9545

Report produced on: Thu Dec 11 08:47:07 EST 2008
  
```



45°

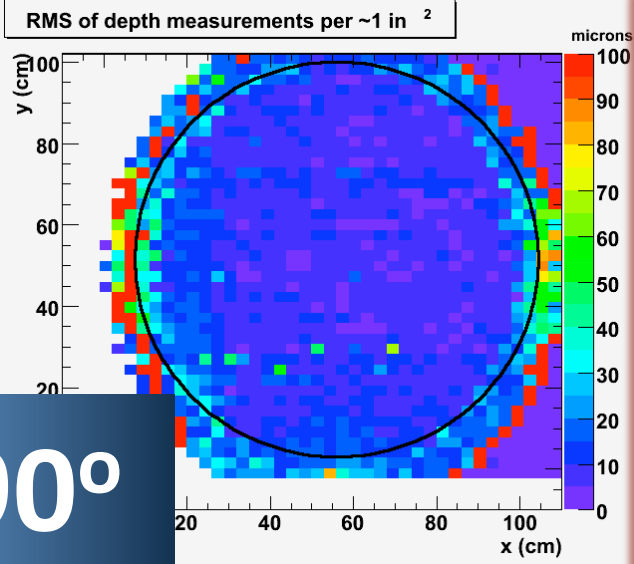
```

=====
Report for "plane004 045deg 2008_12_10 15_20_32.root"
-----
Active area radius used: 48.5 cm
Cathode center used: x=56 cm   y=51.5 cm

Values below reported for active area only:

mean depth: 4.57561 mm
min. depth: 4.38091 mm      location: x=-13.5 y=-42.4091
max. depth: 4.756 mm        location: x=43.5 y=-16.9545
    range: 375.091 microns
    mean RMS: 11.1472 microns
    min. RMS: 3.06944 microns      location: x=16.5 y=-29.6818
    max. RMS: 84.6633 microns      location: x=-40.5 y=23.7727

Report produced on: Thu Dec 11 08:47:08 EST 2008
  
```



90°

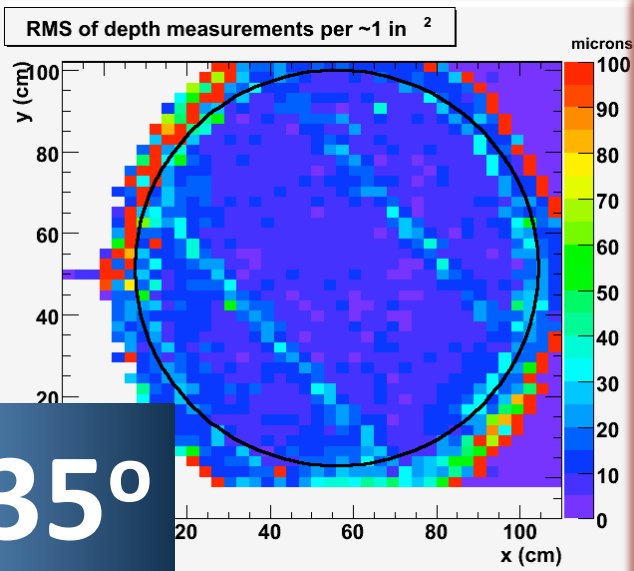
```

=====
Report for "plane004 090deg 2008_12_10 16_00_56.root"
-----
Active area radius used: 48.5 cm
Cathode center used: x=56 cm   y=51.5 cm

Values below reported for active area only:

mean depth: 4.55258 mm
min. depth: 4.02818 mm      location: x=-19.5 y=-42.4091
max. depth: 4.77709 mm      location: x=-43.5 y=16.1364
      range: 748.909 microns
mean RMS: 11.2098 microns
min. RMS: 3.06944 microns   location: x=7.5 y=8.5
max. RMS: 739.489 microns   location: x=-46.5 y=5.95455

Report produced on: Thu Dec 11 08:47:09 EST 2008
  
```



135°

```

=====
Report for "plane004 135deg 2008_12_10 16_37_18.root"
-----
Active area radius used: 48.5 cm
Cathode center used: x=56 cm   y=51.5 cm

Values below reported for active area only:

mean depth: 4.51388 mm
min. depth: 4.00618 mm      location: x=13.5 y=-44.9545
max. depth: 4.74527 mm      location: x=-40.5 y=21.2273
      range: 739.091 microns
mean RMS: 11.482 microns
min. RMS: 3.10691 microns   location: x=19.5 y=21.2273
max. RMS: 98.2512 microns   location: x=-43.5 y=5.95455

Report produced on: Thu Dec 11 08:48:25 EST 2008
  
```

Operation knowledge is documented
in a series of HOWTO wiki pages

FDC - GlueXWiki

http://www.jlab.org/Hall-D/software/wiki/index.php/FDC

Local Docs David Lawrence JANA JLab GlueX CNU DAQ Misc Private

Magnetic Field Study Test Plan [edit]

- http://www.jlab.org/Hall-D/detector/fdc/magnet_test_plan.pdf.

Laser Scan Flatness Measurements [edit]

- Documentation
 - HOWTO Take a new FDC Flatness Scan
 - HOWTO Analyze a FDC Flatness Scan
 - HOWTO move the FDC Flatness Scanner to a specific position
 - HOWTO Read the laser in real time
- Flatness plots and discussion from original scanner

Misc. [edit]

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Example of a HOWTO

(No, I don't expect you to be able to read it here!)

David | my talk | preferences | my watchlist | my contributions | log out

article | discussion | edit | history | protect | delete | move | watch

HOWTO move the FDC Flatness Scanner to a specific position

To move the laser measurement device to a specific location, do the following:

Moving the Laser

[edit]

1. Make sure the computer is on as well as the driver box and the VME crate (you will need to wait for 2 minutes after first turning on the VME crate to allow it time to boot up)
2. Log in to the VME crate using *telnet*. The VME crate allows only one telnet connection at a time so you'll need to kill any existing telnet process to ensure no other connection currently exists:
 - `killall -9 telnet`
 - `telnet halldsc1`
3. Now you may start typing commands to move the laser. Several commands exist, the most relevant being:
 - `Laser_Home()`
 - `Laser_MoveRelative("x","y")`Type in either command (though replacing *x* and *y* with actual numbers) and hit return to start moving the laser right away.

The `Laser_Home()` command will move the laser until both the limit switches in the lower, left-hand side are hit. Note that this move can take a couple of minutes if the laser is starting far from the bottom of the range.

The values entered for *x* and *y* are in inches and will move the laser to a position relative to it's current position. Three things to note:

- The laser will stop motion in a given direction if it hits either of it's limit switches. It will continue any remaining motion in the orthogonal direction though.
- Negative values may be entered, be aware which directions are positive and which are negative (they are marked near the ends of the rails).
- The absolute position of the laser is reported in inches relative to the home position at the end of every call to `Laser_MoveRelative("x","y")`.

NOTE: Because of limitations in how the VxWorks command prompt works, it is not possible to call the routine that moves the laser to an absolute position from the command prompt. You will need to simply do the math yourself to make the appropriate move with `Laser_MoveRelative("x","y")`, or in the worst case, issue a `Laser_Home()` command followed by a `Laser_MoveRelative("x","y")` command passing in the absolute coordinates as the arguments.

[edit]

Troubleshooting

- If you make a mistake and wish to stop a currently executing motion, then you can do one of the following:
 1. Turn off power to the driver box to immediately stop motion in both directions.
 2. You can activate the limit switch by hand to stop motion in a given direction. Only do this if the laser is far from the switch you're activating to avoid getting your finger pinched.
 3. Turn off power to the VME crate. This should immediately stop motion in both directions. If you do this, you should issue a `Laser_Home()` command to recalibrate the laser position as known by the VME crate once the VME crate has been rebooted.
- If there are problems of any sort with either logging in to the VME crate or getting any response from the motors, try power cycling the driver and VME crate first. If there are still problems, try rebooting the Desktop computer.

[edit]

Contact

Please refer any questions to David Lawrence davidl@jlab.org x5567

Remaining issues

- Are the values being extracted from the data the appropriate ones for what we need to know about the planes?
- Copying the scan data from the computer can be burdensome without a network connection. Sneaker-net will be used for the time being until the benefit is made clear given the potential cost.
- Finer-grained y-scans?
- Fiducial area calibration
- Additional documentation