AGS pp Status

Haixin Huang

Jan. 13, 2015
Time Meeting

Timeline

- Dec. 22-23: Booster setup.
- Dec. 29-31: AGS setup with Westinghouse. No snake machine.
- Jan. 2: switching to Siemens in the morning, setup AGS first without snakes, then with snakes.
- Jan.3-4: Instrumentation (tunemeter, IPM, eIPM, polarimeter, JQ) setup.
- Jan. 5-6: Confirmed spin flip signal in AGS user4 so we got polarization around 60%.
- Jan.7-9: setup Booster RF with dual harmonics. Leave dual harmonics in the Booster since Jan. 9 night. Ring access on Jan. 8 fixed the F10 beam pipe problem.
- Jan. 10-12: setup JQ timing. It seems that the jump quads timing should be earlier than the prediction. Take measurements for polarization profile and intensity scan.
- Jan.13: source maintenance, setup Au for RHIC p-A aperture check later.

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Status

- Dual harmonic RF setup has been tested in the Booster. With the h=2 cavity on for longer time (120ms), the beam seems brighter at extraction (same beam size, but more intensity). It has been used since last Friday.
- Keith has taken another intensity scan (varying Booster input and checking MW006 beam size).
- Several JQ timing files have been tried. It seems that the timing needs to be earlier by 0.5ms from the timing derived from energy and tune measurements.
- Polarization is in the low 70% with $2*10^{11}$ intensity.
- Benefit of JQ is seen: JQ on: 73.54+-1.26; JQ off 67.79+-1.19; ratio: 1.085+-0.024. Intensity was $1.5*10^{11}$.
- Some polarization profile measurements are done. At $2*10^{11}$, R_x=0.054+-0.017, R_y=0.093+-0.016.
- Source maintenance today and AGS eIPM repair work is also done today.

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F10 Beam Asymmetric Beam Pipe

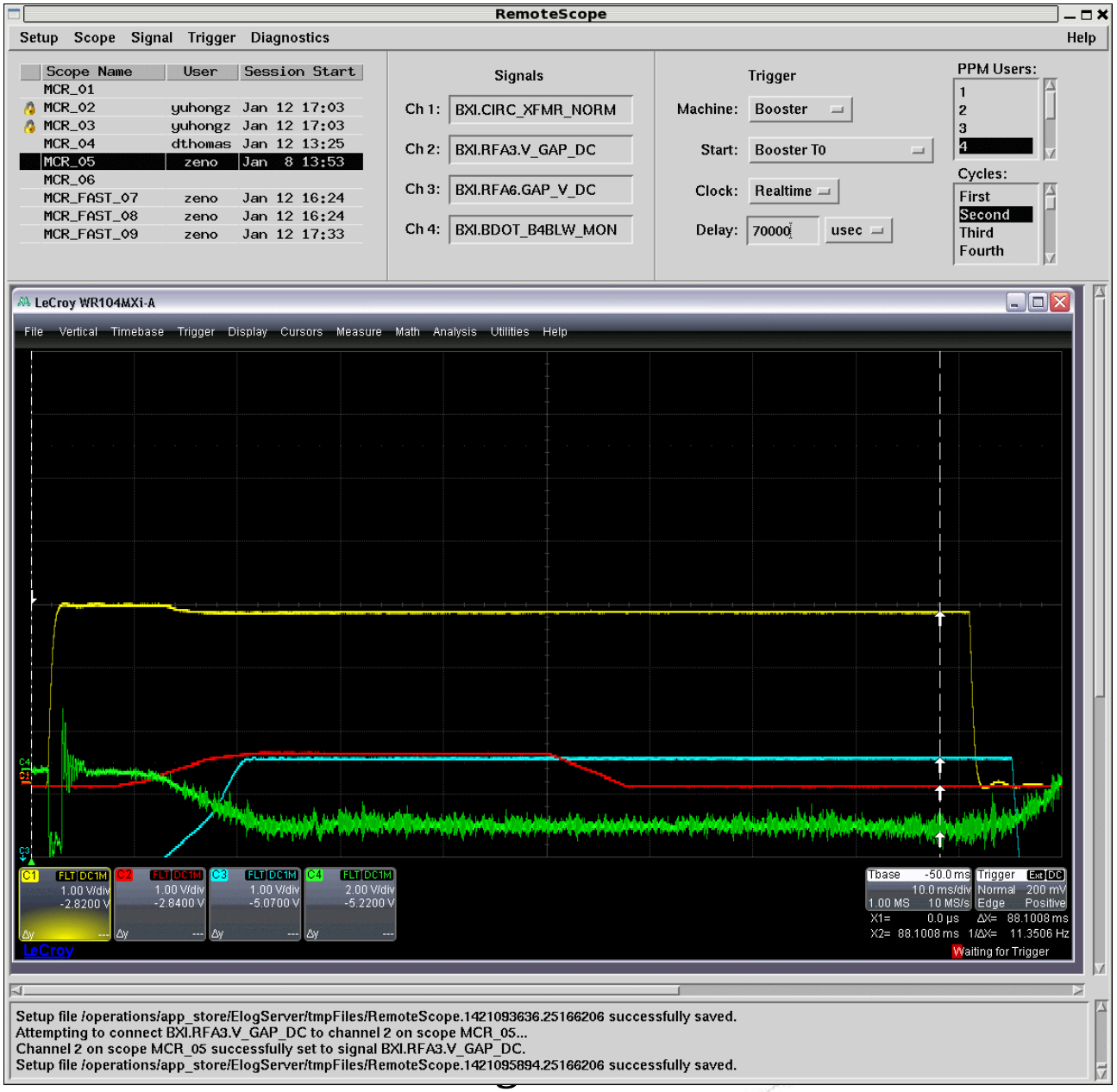
- When we started AGS setup, a large BLM reading occurred at F12. A radial move of 15mm is required to get rid of the beam loss.
- A ring access was made last Thursday. It turned out that the beam pipe was asymmetric and was not installed in the correct orientation. Radiation survey also confirmed the hot spot.
- It was repositioned and the beam aperture problem went away.

Booster Dual Harmonic RF Cavity

Almost no loss with h=2 on.

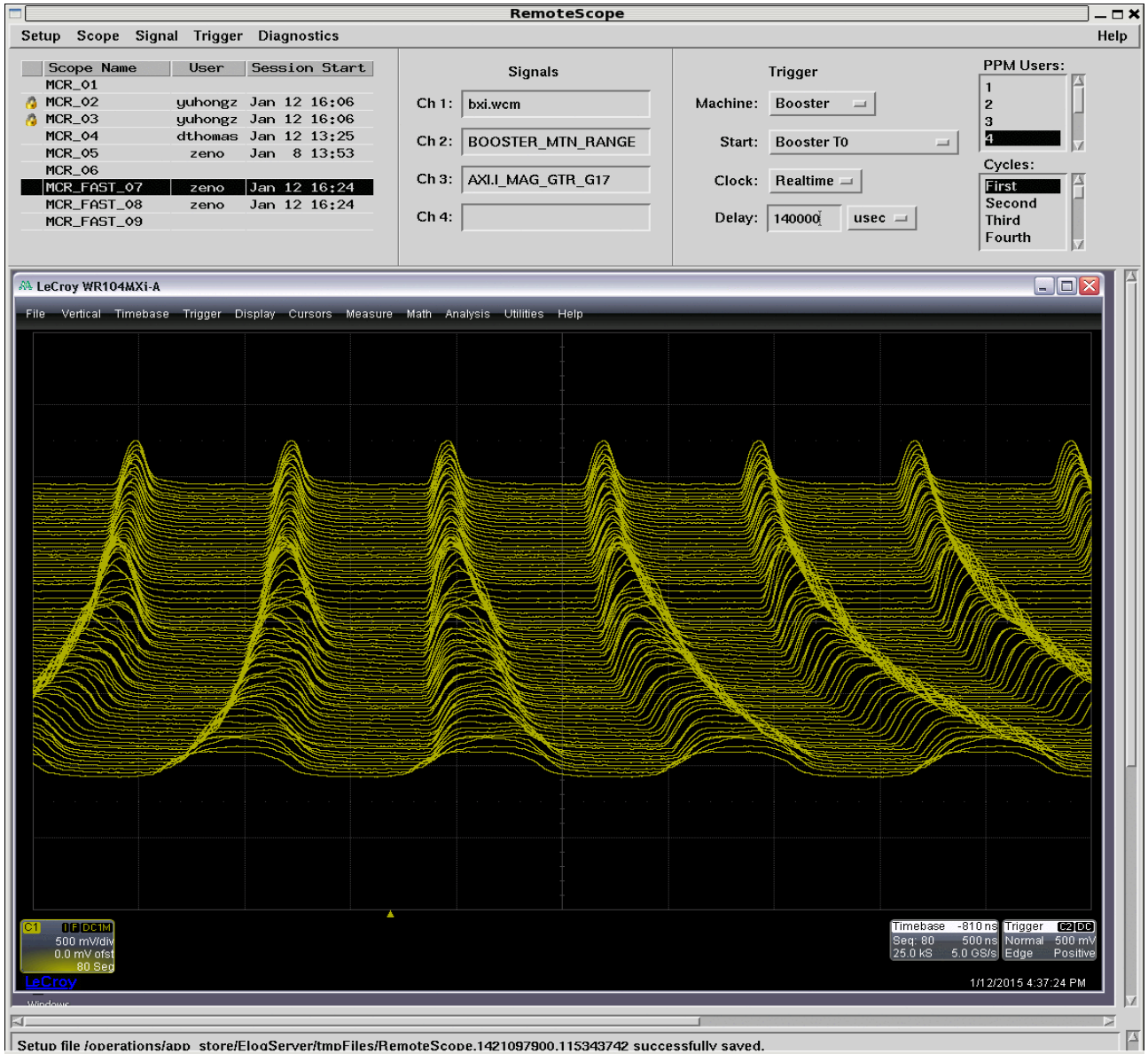
Yellow: Intensity

Red: h=2 voltage



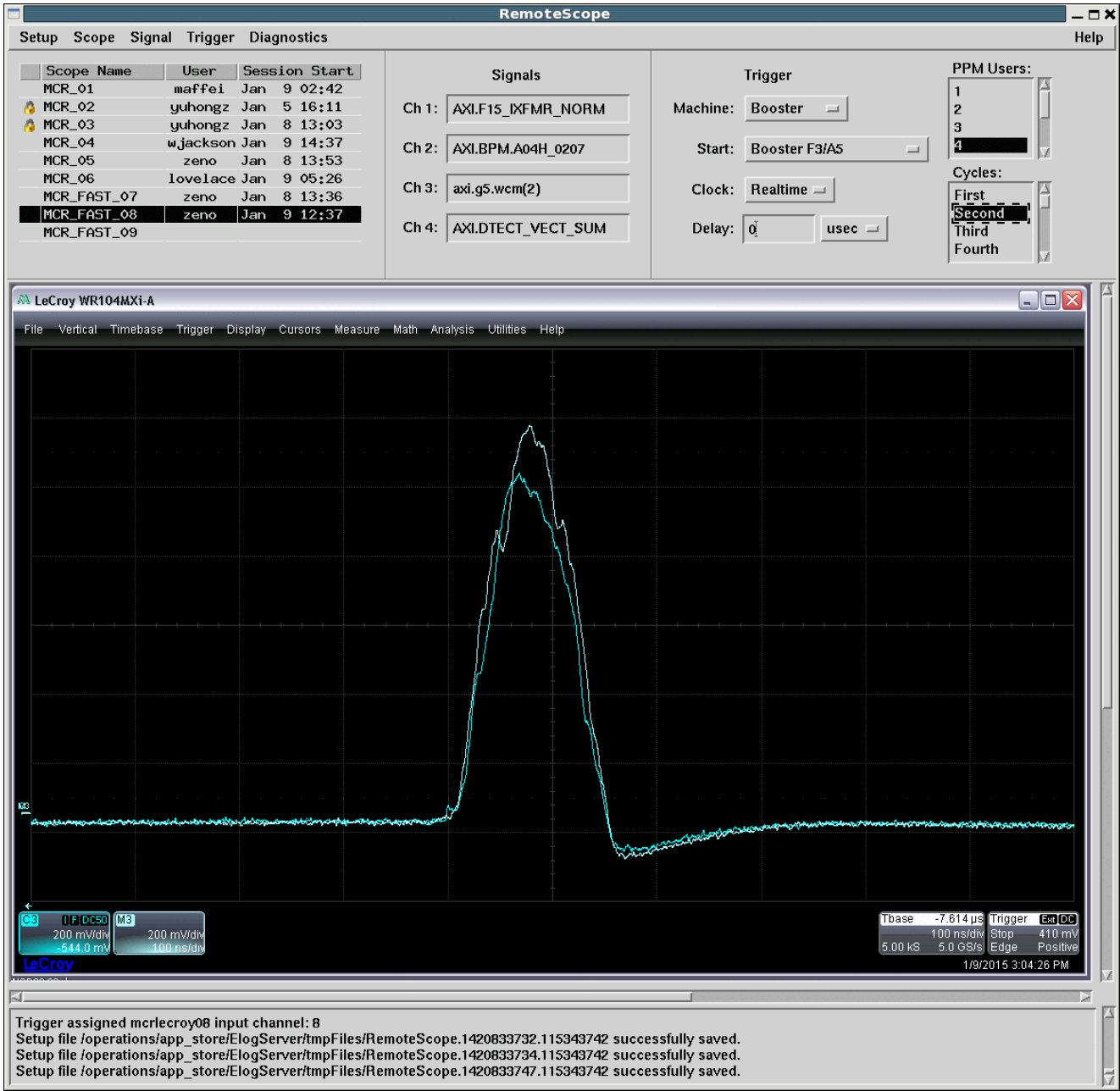
Booster Mountain Range

H=2 is off →

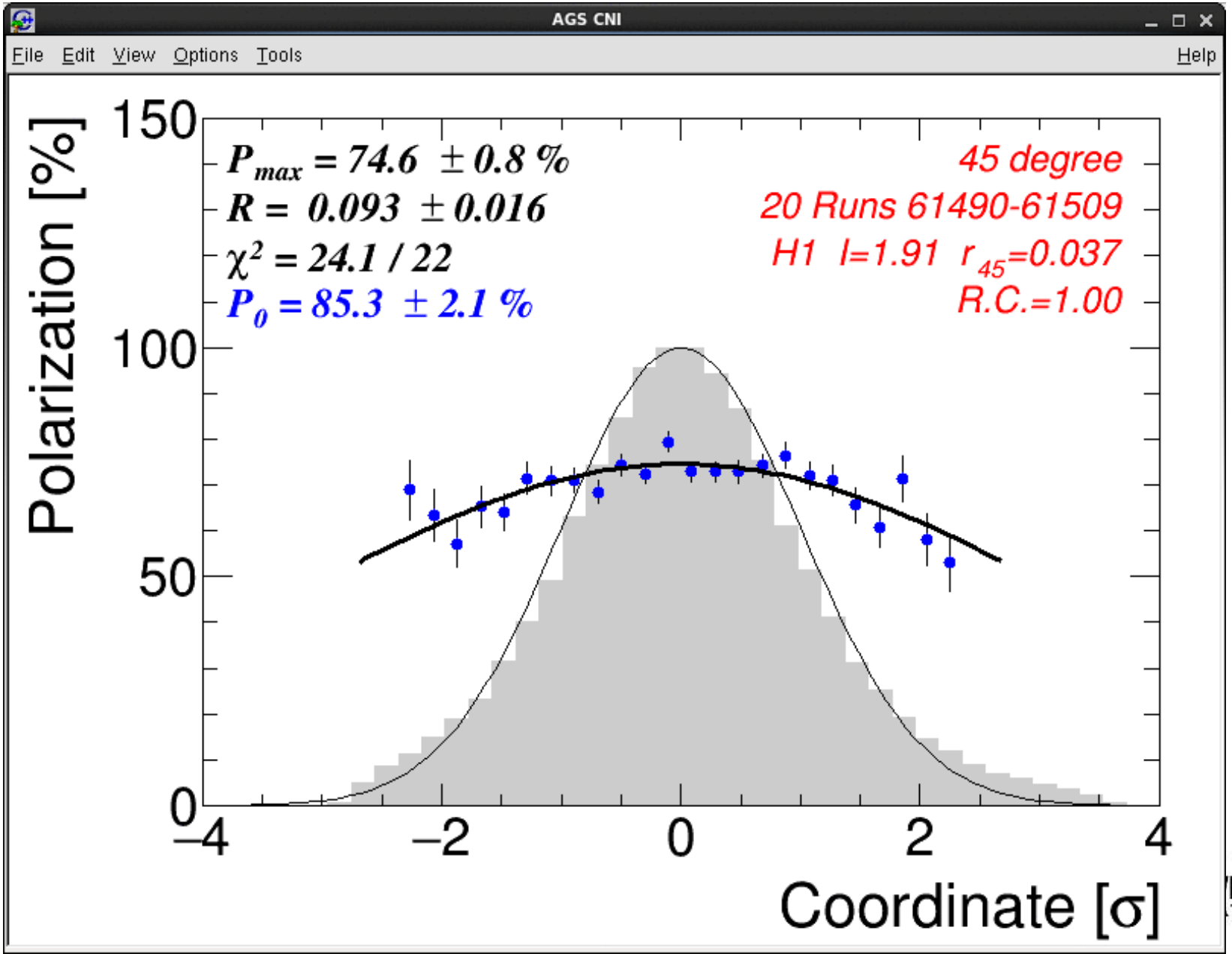


Booster Longitudinal Profile

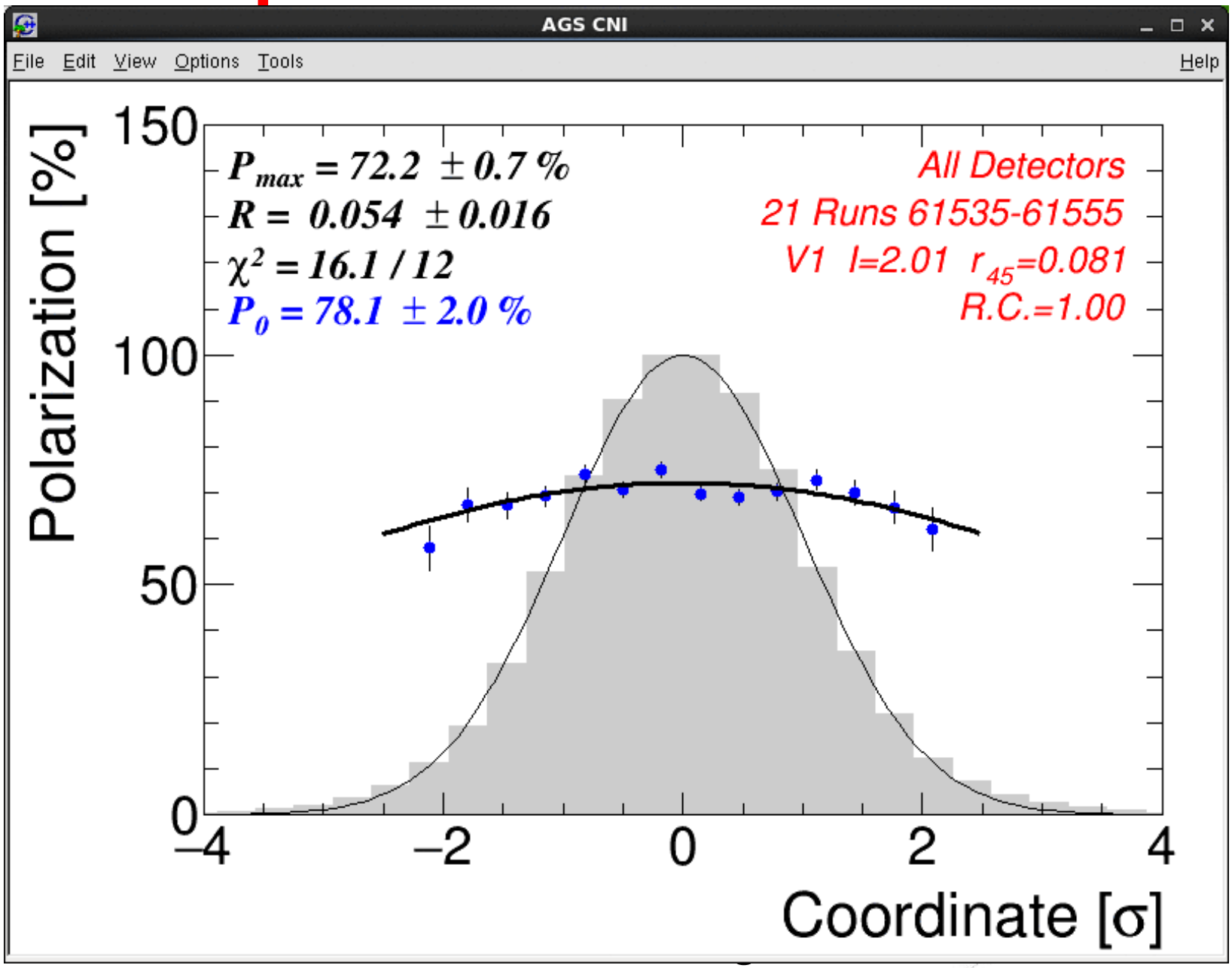
The higher peak is with h=2 on.



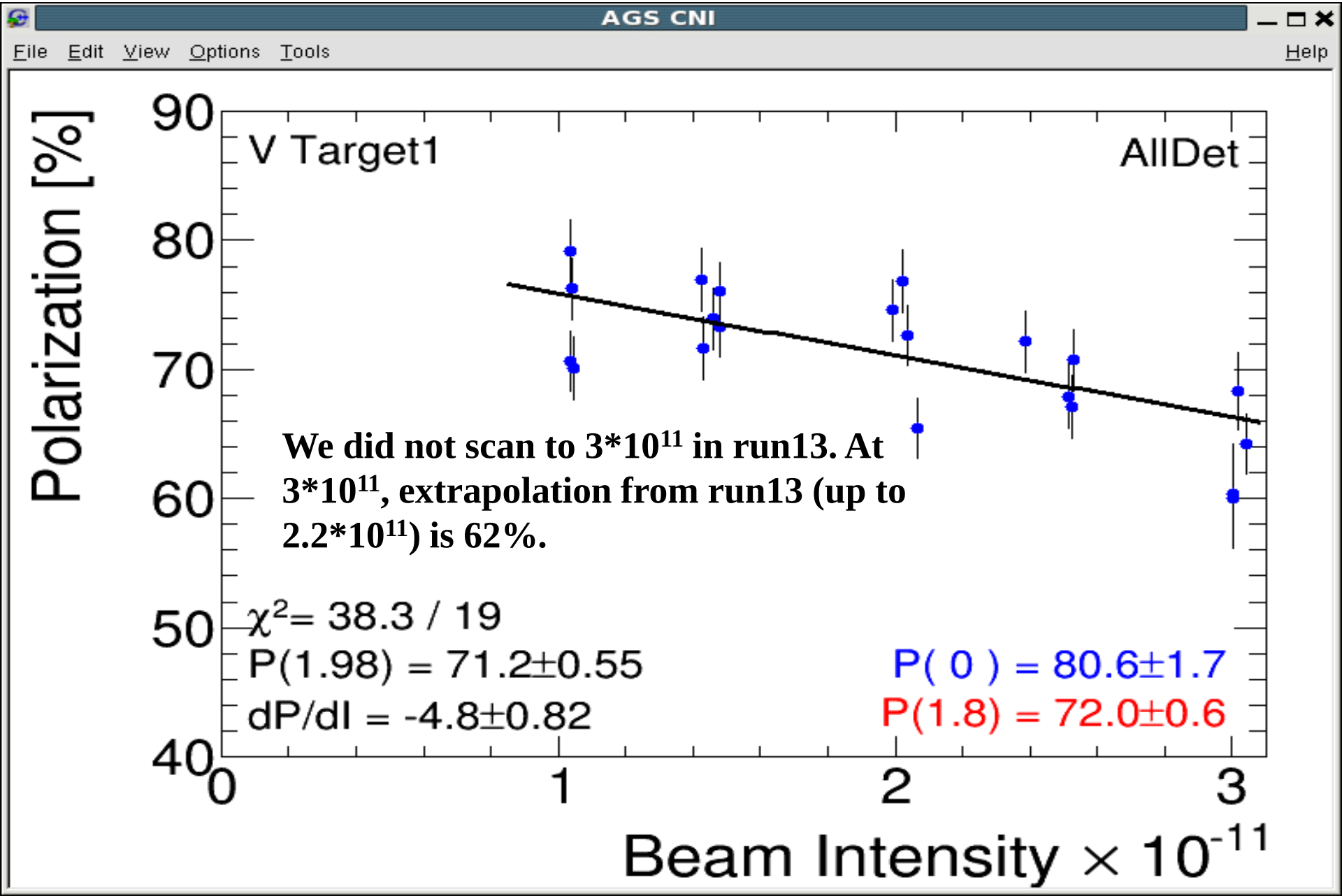
AGS Flattop Vertical Polarization Profile



AGS Flattop Horizontal Polarization Profile



AGS Polarization Intensity Scan



We did not scan to $3*10^{11}$ in run13. At $3*10^{11}$, extrapolation from run13 (up to $2.2*10^{11}$) is 62%.