

AGS/Booster Status

Haixin Huang

May 28, 2013
Time Meeting

He3 Test Reached All Goals

1. The Booster bunch merge has been done at lower energy ($G_{\text{gamma}}=-4.5$).
2. The vertical tune at injection has been lowered to below 4.11 which is required to avoid a spin resonance.
3. The betatron tune has been measured at injection with PIP.
4. EBIS intensity has been increased from 3.4×10^{10} to 3.9×10^{10} .
5. The efficiency is significantly improved throughout, the AGS flattop intensity has reached 10^{10} , a factor 3.3 more than last year.
6. Vertical tune has been raised to above 8.97 at 0+ and after. This is required for polarization preservation.

Key people for the success: Jim and Ed for the EBIS; Keith and Kip for the Booster and AGS setup; Kevin, Freddy and Tom for RF; JohnM for the Booster injection field regulation.

Next year, we may revisit He3 beam behind RHIC gold run while NSRL is not running. The goal is to setup bunch merge in the AGS.

Better Polarization with New TJ Quads Timing

(Courtesy to Yann)

Energy (Gg)	date of the measurement	timing from Ggmeter	timing from polarization scan
45	May 16th	572.449	572.049
27	May 18th	413.426	413.226
21	May 25th	362.527	362.327
9	May 19th	262.894	262.794

Comparison Results (error bar is about 1.8%):

H3 target

JQ off : 62.88%

JQ on, old timings : 65.71%

JQ on, new timings : 69.14%

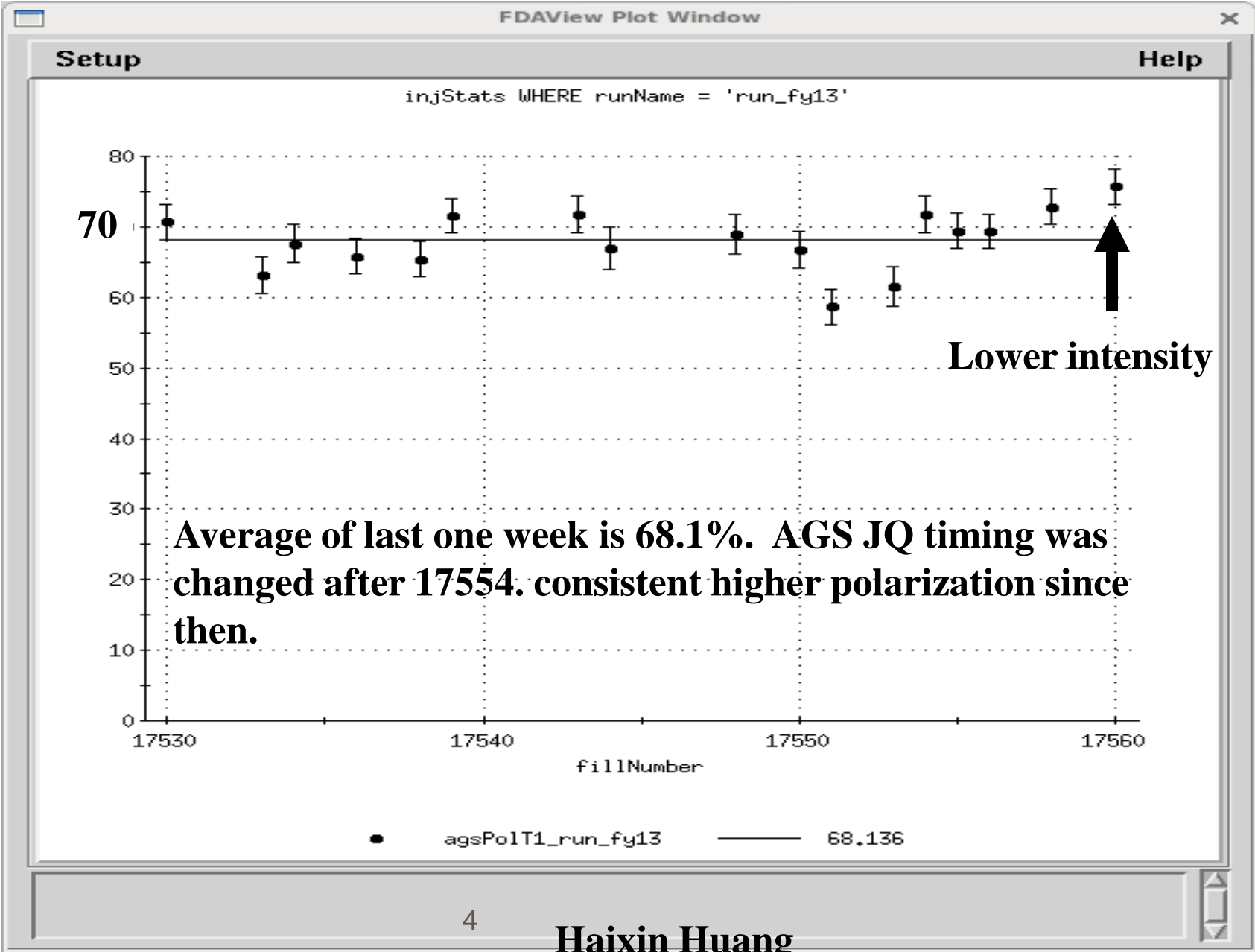
V4 target

JQ off : 63.46%

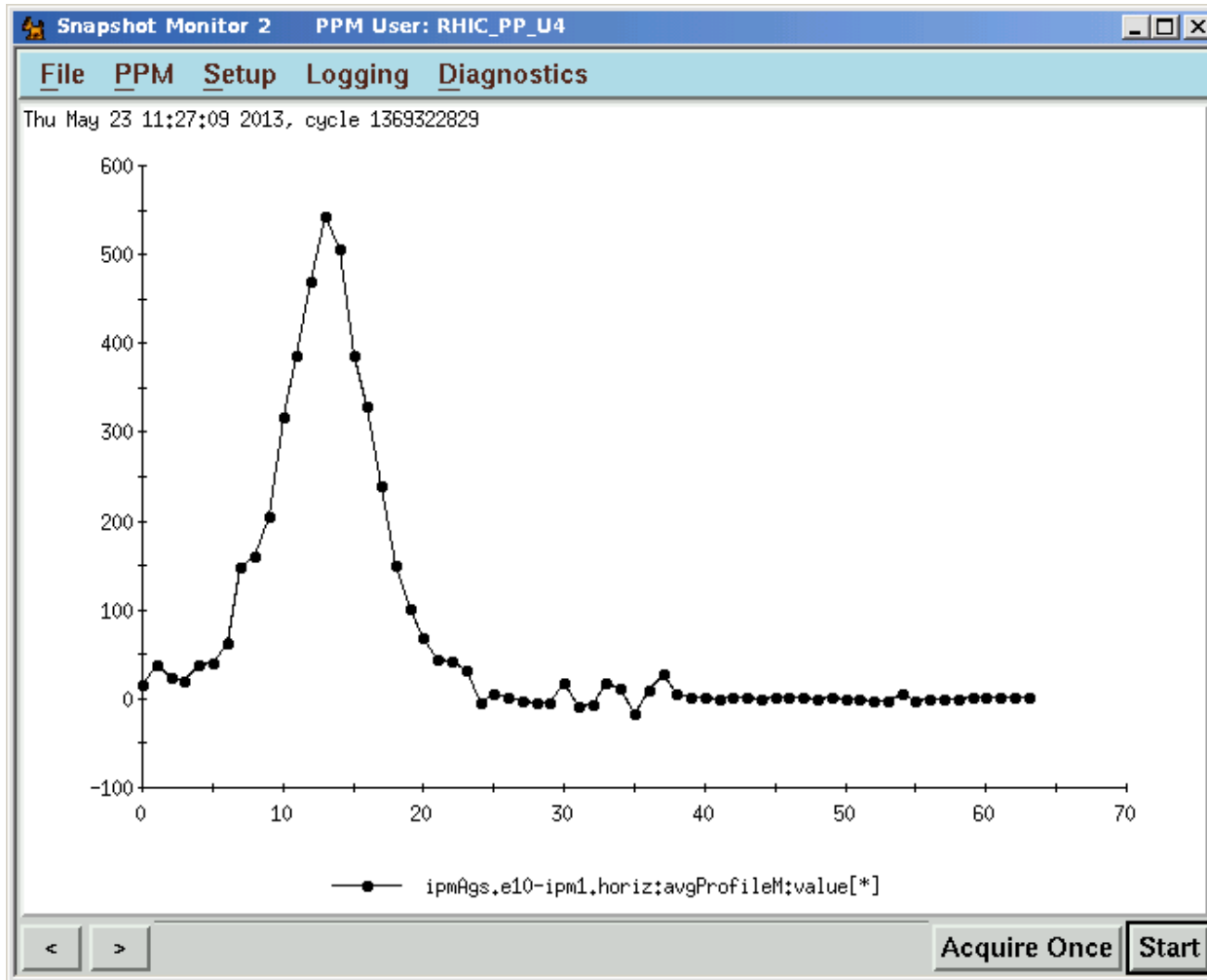
JQ on, old timings : 68.35%

JQ on, new timings : 72.77%

AGS Polarization for RHIC



AGS New IPM Showing Profile!

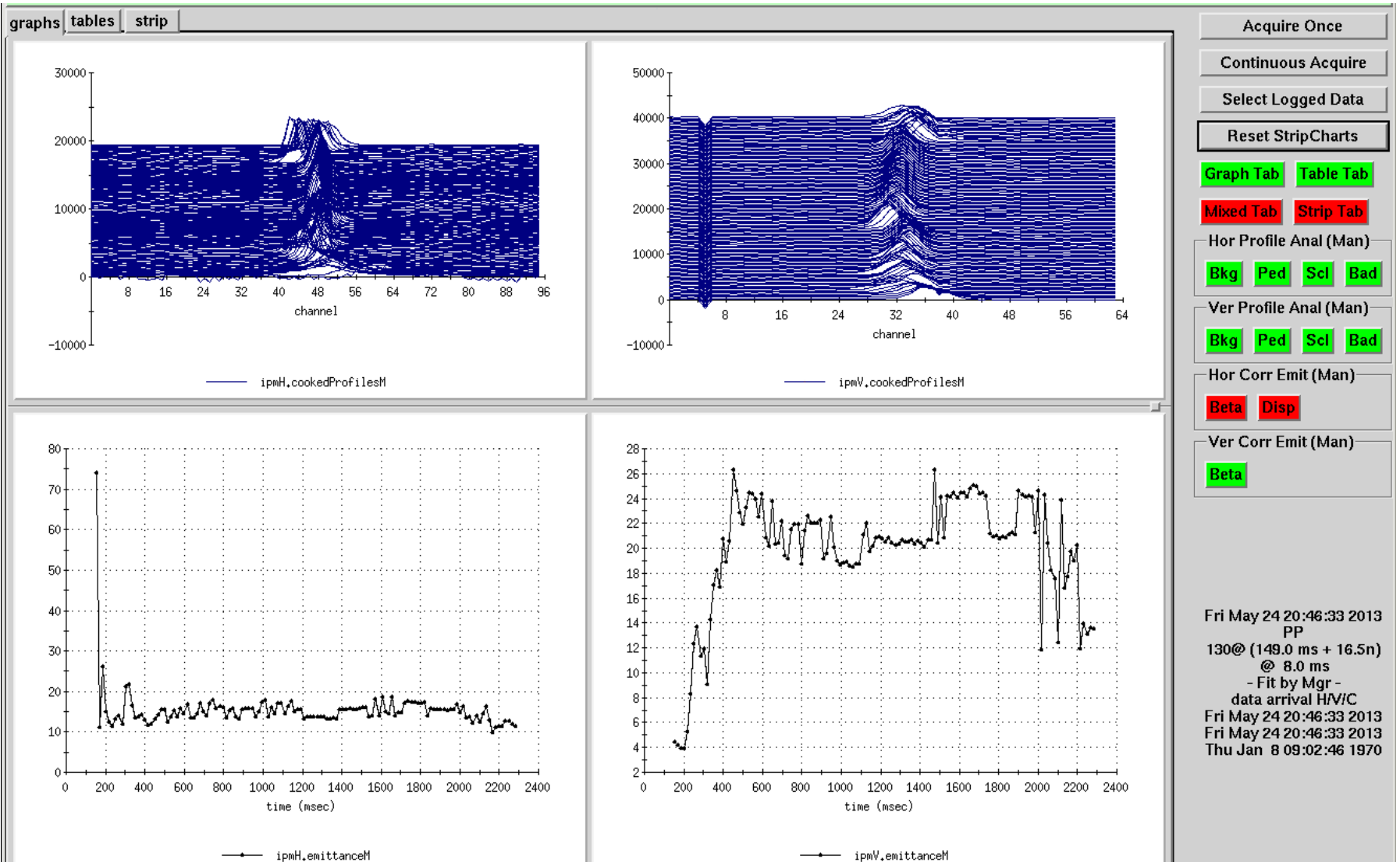


(done by Roger,
RobM, Craig,
SteveJ and many
more)

A profile at 450ms on the AGS ramp. In the remaining two weeks, it will be used at AGS flattop to check the performance first, then move on to take data near injection.

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AGS Down Ramp Development



It will be used for polarization and emittance measurements. So far, beam survived before to transition.

Many Progresses in Last Week

- Since betatron tune can drift over time, we would like to change the JQ timing. We could not do so since middle of April, as new timing generated gave poor polarization. We chased all possible sources for the difference. Finally, we have made changes on JQ timing successfully over the weekend, based on polarization timing scan data (carried out by Yann). Polarization is steadily higher.
- AGS flattop tunes were changed to get rid of emittance growth on Friday. Consequent AtR was made. Over the weekend, the changes were reverted, caused some efficiency issue for RHIC fill. Will look it today.
- We lost one polarimeter target this weekend (lost rate is about one per 2 month). We will use the left two vertical targets through the rest of run.
- Beam has been decelerated in the AGS before transition in the down ramp development.
- New type of AGS IPM (eIPM) showed first profile last Thursday.
- He3 test has finished last Thursday and reached all goals.
- This week, we will prepare a low energy proton extraction set up (5.86GeV) for the RHIC APEX study on Thursday.