AGS/Booster Status

Haixin Huang

April 30, 2013
Time Meeting

AGS Polarization for RHIC

FDAView Plot Window

Setup   Help

injStats WHERE runName = 'run_fy13'

70

Average of last one week is 69.5%. A few low polarization values are bad measurement or for APEX.

fillNumber

● agsPolT1_run_fy13   —— 69.5077

2

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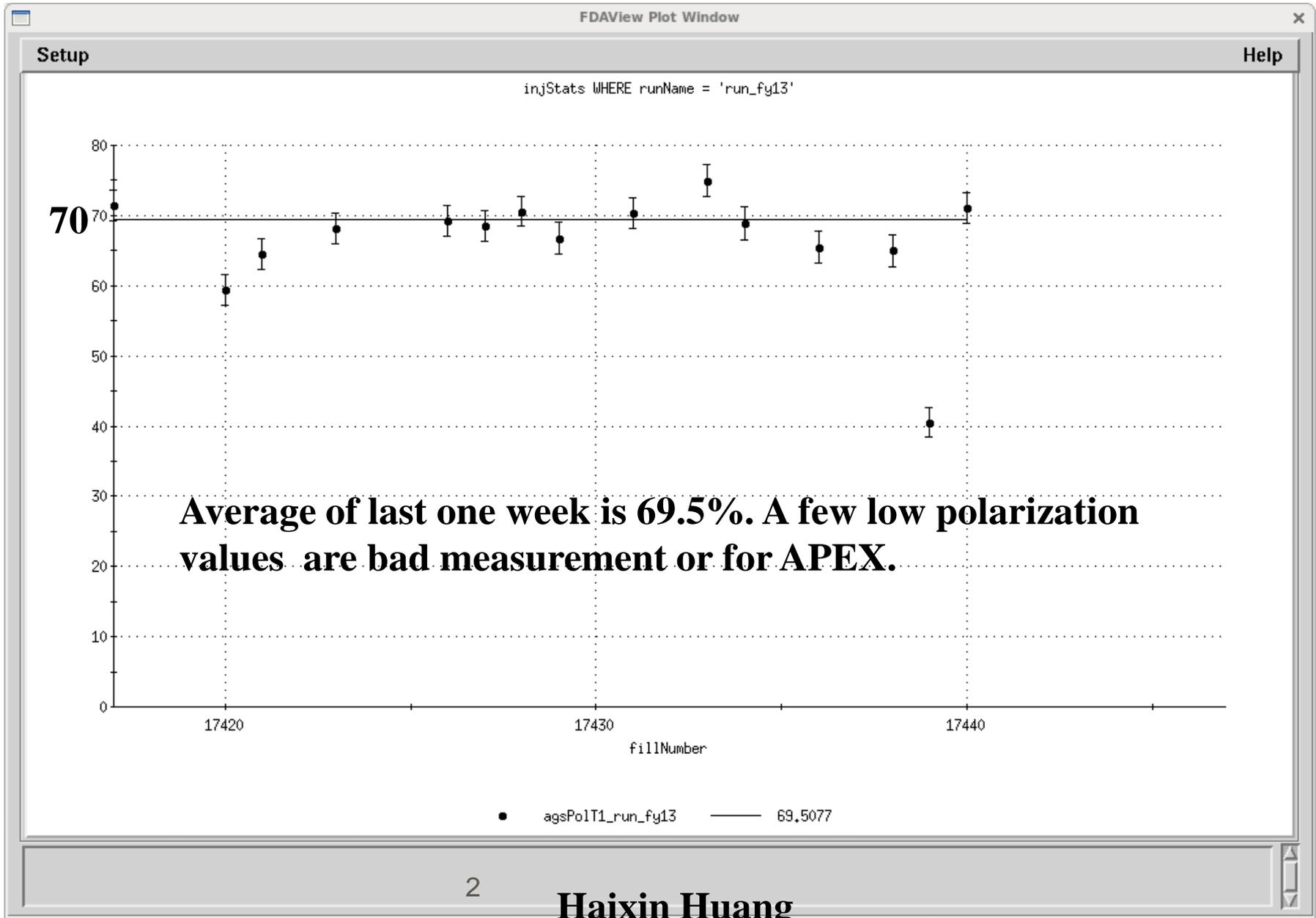
Horizontal Polarization Profile at Extraction

AGS CNI

File   Edit   View   Options   Tools   Help

$P_{max} = 71.4 \pm 0.4\ \%$

$R = 0.103 \pm 0.009$

$\chi^2 = 20.6\ /\ 12$

All Detectors
40 Runs 57723-57896
V3 I=2.07 r_{45}=0.081
R.C.=1.00

Polarization [%]

Coordinate [σ]

3

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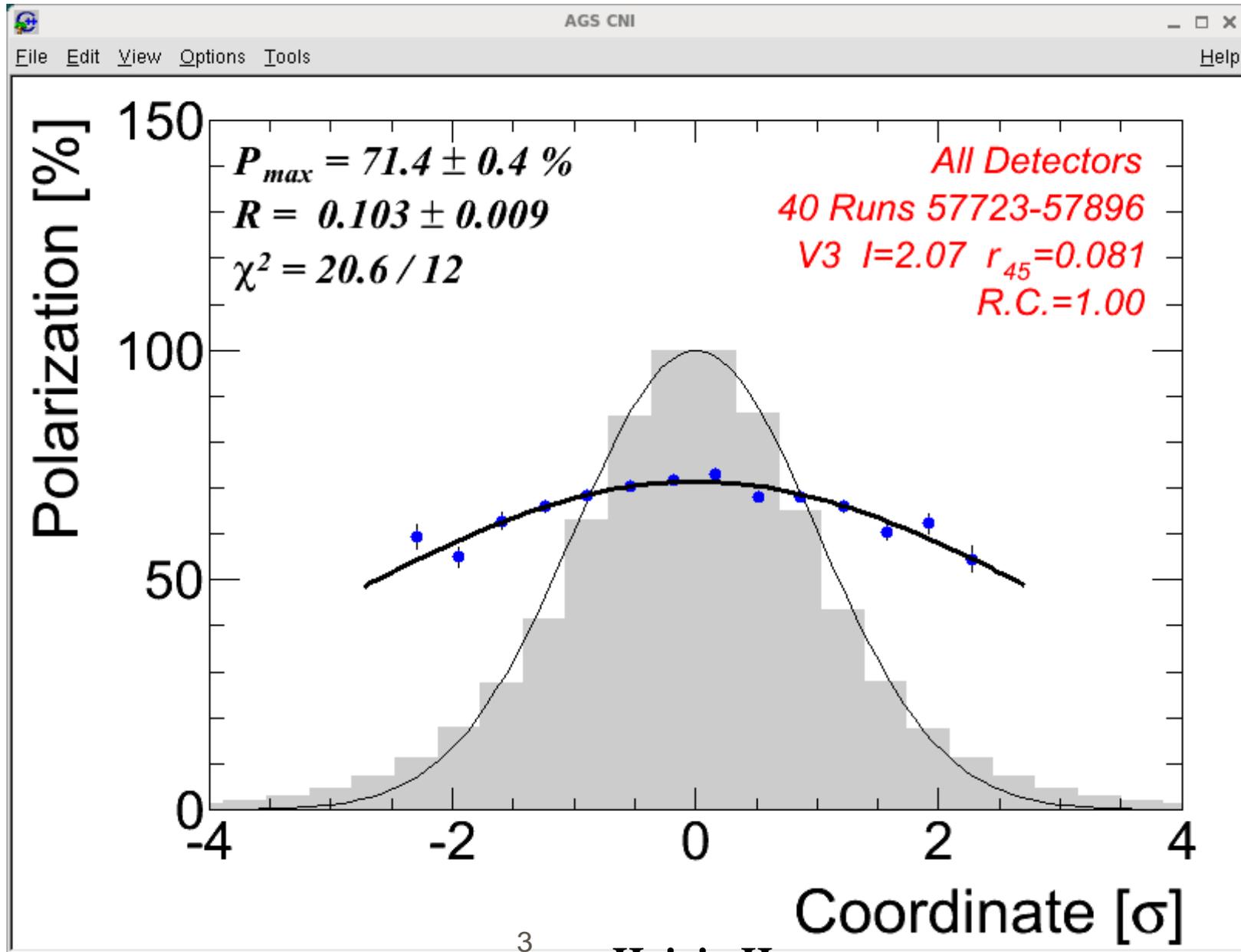
Vertical Polarization Profile at Extraction

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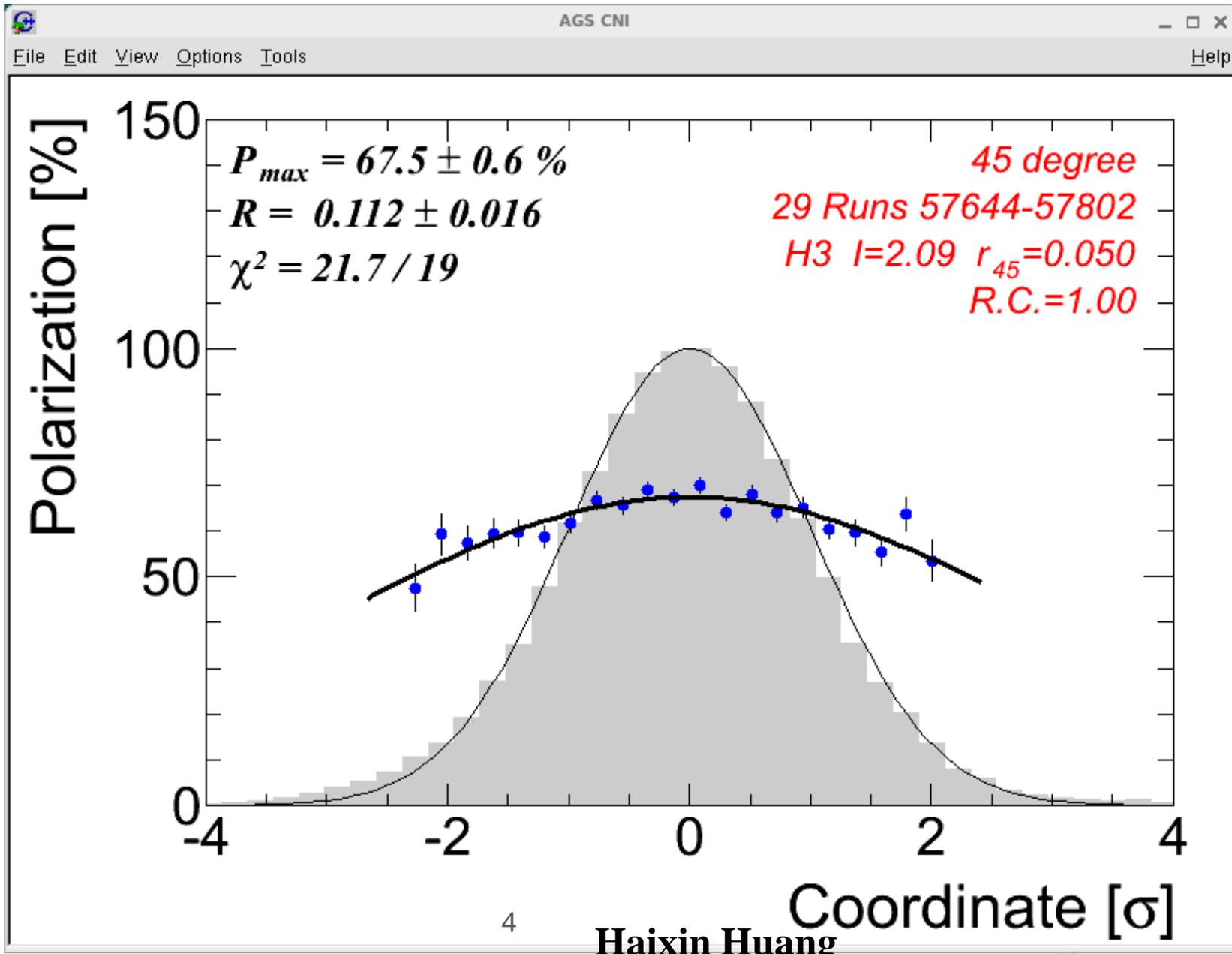
Polarization Information from the Profiles

If we assume polarization loss is due to polarization profile development, we can get the polarization prediction at AGS flattop based on the polarization profiles measured. Assume Source polarization is 80%, here are the comparison of measured and projected peak polarization at AAGS extraction:

Intensity   Meas. peak pol.   Meas. R value   Projected peak pol.

$2*10^{11}$, H prof. P_F=71.4+-0.4%, R=0.103+-0.009 $\quad$ P_{F_model}=68.5+-1.0%

$2*10^{11}$, V prof. P_F=67.5+-0.6%, R=0.112+-0.016 $\quad$ P_{F_model}=68.8+-1.0%

$1*10^{11}$, H prof. P_F=74.9+-0.6%, R=0.055+-0.013 $\quad$ P_{F_model}=74.4+-1.1%

$1*10^{11}$, V prof. P_F=73.2+-0.9%, R=0.047+-0.016 $\quad$ P_{F_model}=74.1+-1.1%

This consistency check shows that AGS polarization value is close to the true value.

We will continue the profile measurements with other intensities.

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Status

- Continue to provide polarized proton beam for RHIC physics program, polarization is near 70%.

- Take many polarization profile measurements with two different intensities. The results are consistent with polarization loss due to particle betatron amplitudes.

- Studied if weaker cold snake strength will benefit polarization. So far not seeing that.

- Started beta function measurement at IPM locations. This is important to get remittance values out of the device.

- The 2.5GeV Au test behind RHIC store and NSRL operation did not go far enough to check beam size due to limited resources. This will be held off for now.

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