How to operate RHIC polarimeter RUN-03
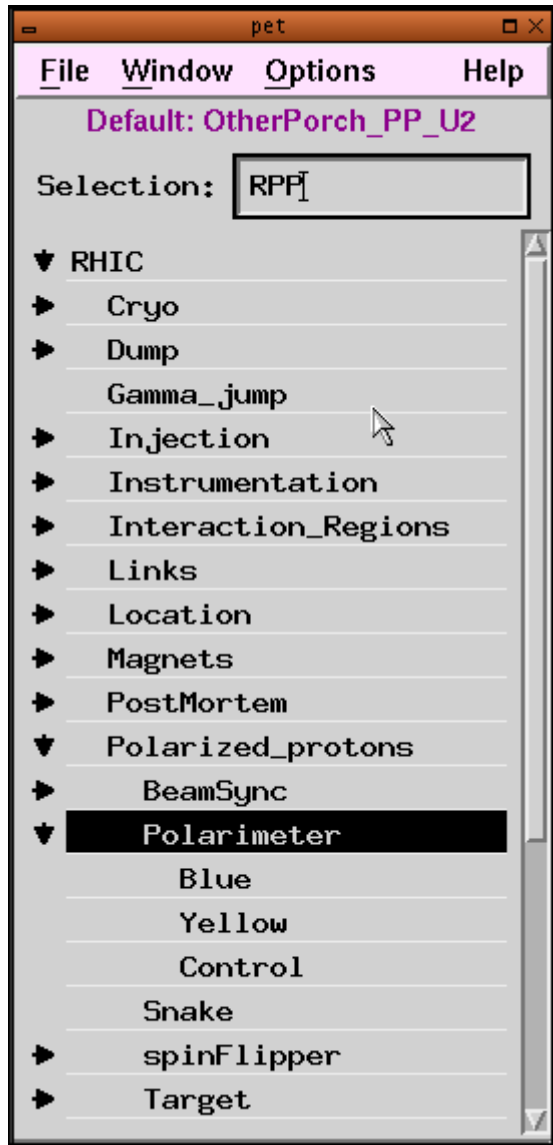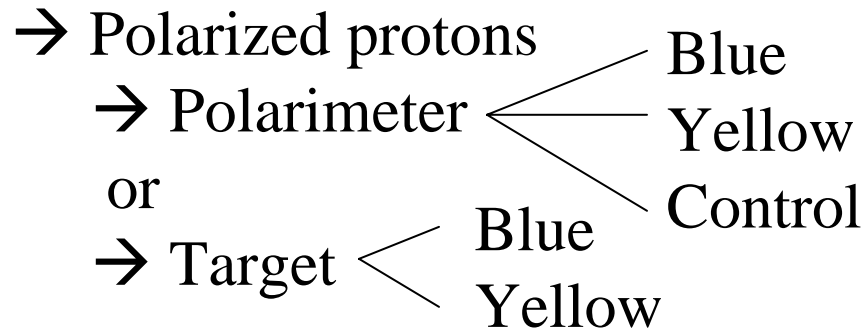
CNI polarimeter group

4/29/03

You can find the polarimeter page in the pet tree

RHIC
→ Polarized protons
    → Polarimeter ← Blue
                    Yellow
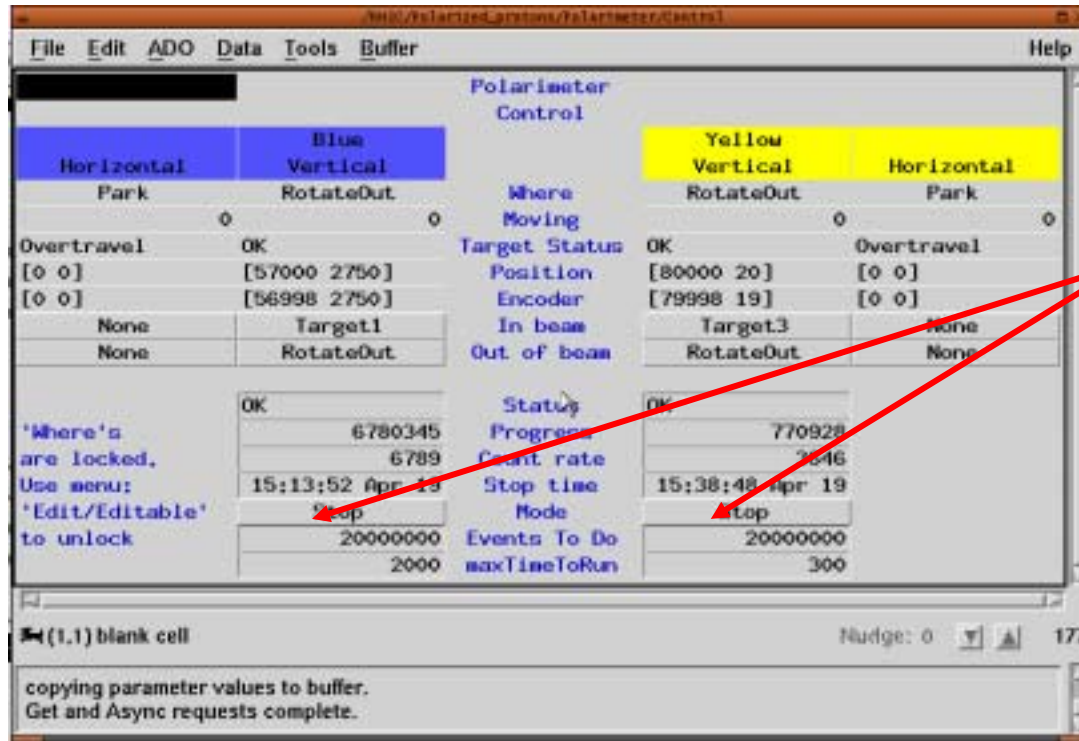   or   Control
    → Target ← Blue
                Yellow

The measurements will be started from the control page, and you can check the polarization results in the Blue and Yellow polarimeter pages.

The target positions can be changed from Target pet page. (Note: they should not be changed from control page)

2

From this control page, you can start your measurement

All you need to click is only these two buttons. But there are several entries which are always need to be checked and monitored.
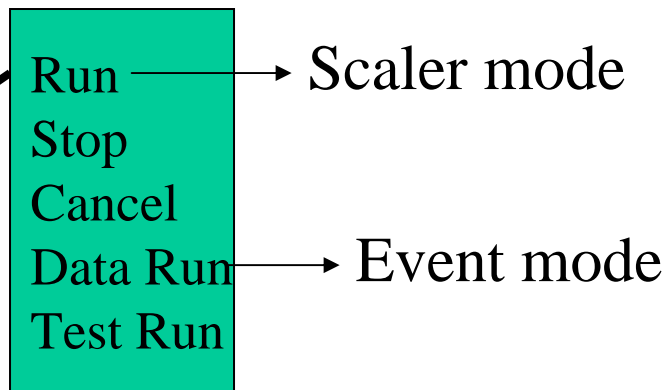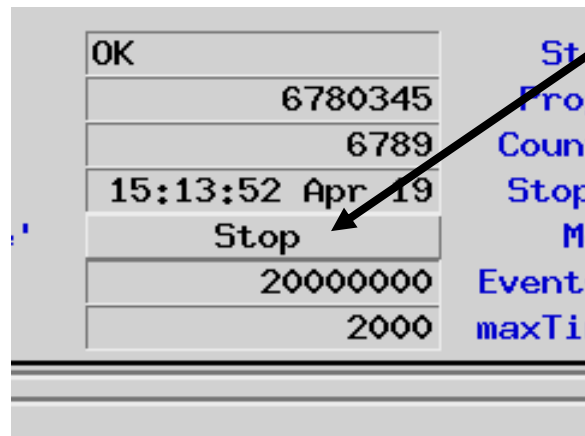
IMPORTANT:
There are two major modes, and you need to switch between these modes in accordance with the beam condition.

- Scaler mode → just counting scaler numbers, the measurements will quit soon. Can be switched to another ring immediately.
- Event mode → need memory readout after measurement (about 5min.) have to wait to finish, cannot be switched right after the measurement

Procedure of selecting two modes

Basic agreement of the switching between two modes are,

1. Measure injection polarization with "Scaler mode" (you can immediately switch to next ring)
2. Measure injection polarization at the other ring with "Event mode". You can give the beam back to machine after you confirm the target is out. (The memory readout happens locally and has nothing to with the beam)
3. ((ramp up to flattop))
4. Measure flattop polarizations for both rings with "Event mode" .But between the rings, you have to make sure that the memory readout is complete.

OK   St
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                 6789   Coun
  15:13:52 Apr 19   Stop
          Stop   M
          20000000   Event:
              2000   maxTi

Run ⟶ Scaler mode
Stop
Cancel
Data Run ⟶ Event mode
Test Run

You can select different mode from the polarimeter control page

4

To start the run

To start a run, click the control button with left mouse and select the proper data taking mode and activate it with middle mouse.
The program will move target first, then the Status will change to "start…".
After the target moved to the desired position, data taking will start, the Status will be "Running…", you can see the total counts in "Progress" entry and count rate per second in below. **Program will stop automatically** after the desired statistics or time limit.

Open Yellow/Blue polarimeter pet page, and see the new result (Note that, with Event mode the result won't show up for 5min.). Divide "avgAsymX" and error by "Analyzing power" to get polarization. Dump this page into elog with polarization as comment. Also make notes on the CNI log sheets (paper).

[When you finish the measurement with Event mode]
You will see the <u>minus number</u> increasing in the "Progress" entry. Mostly it will increase up to 30M events. Then you might see the Status "W-*****", just make comment on log sheet. If you see the Status "E-****", please contact experts.

Target scan procedure

- Sometimes beam may be moved from the optimum target position, then you need to do a mini target scan while measuring the polarization. If rate is higher than 100k/sec, you don't need to do this.

- Regularly we are using vertical target 1 for blue, vertical target 3 for yellow (4/29)

How to scan the target

Open the target pet page and change the Y-position of the vertical target 1 or 3 by 5 counts, then hit return. Then click "commands" in x column , select the target1 or 3.

Target will first moved out and then back in to the new position. Check the count rate on the control page, iterate the same procedure and find the peak count position.
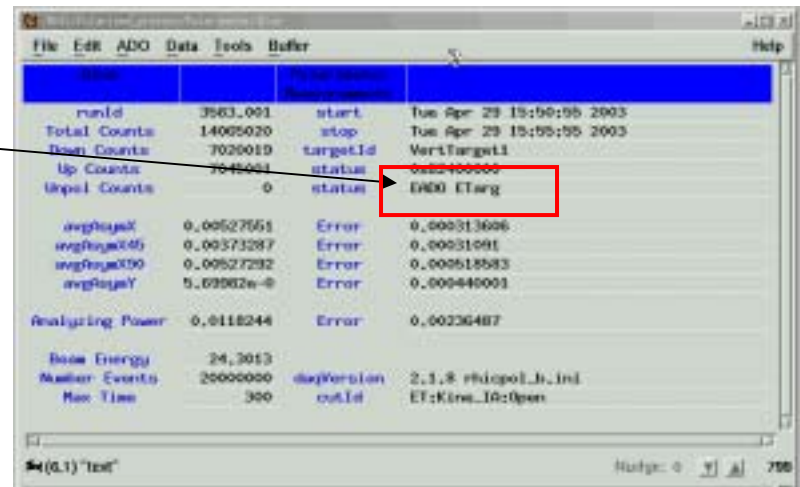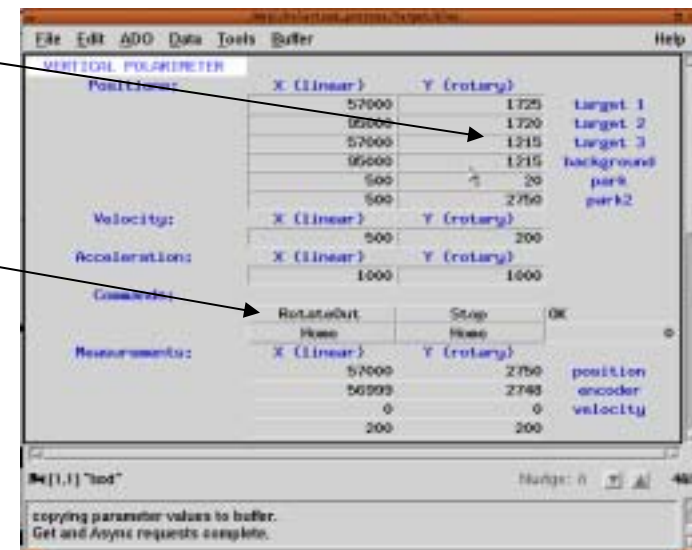
Some Notes

Optimal target position might be changed from injection energy to flattop energy. Be updated with the latest numbers from experts, or previous shift.

Targets are supposed to be automatically out after the measurement, but please be careful with the encoded target position numbers. If you find they are still inside the beam you can take them out with the target pet page.

If you see the status "EADO ETarg" let's check the target position