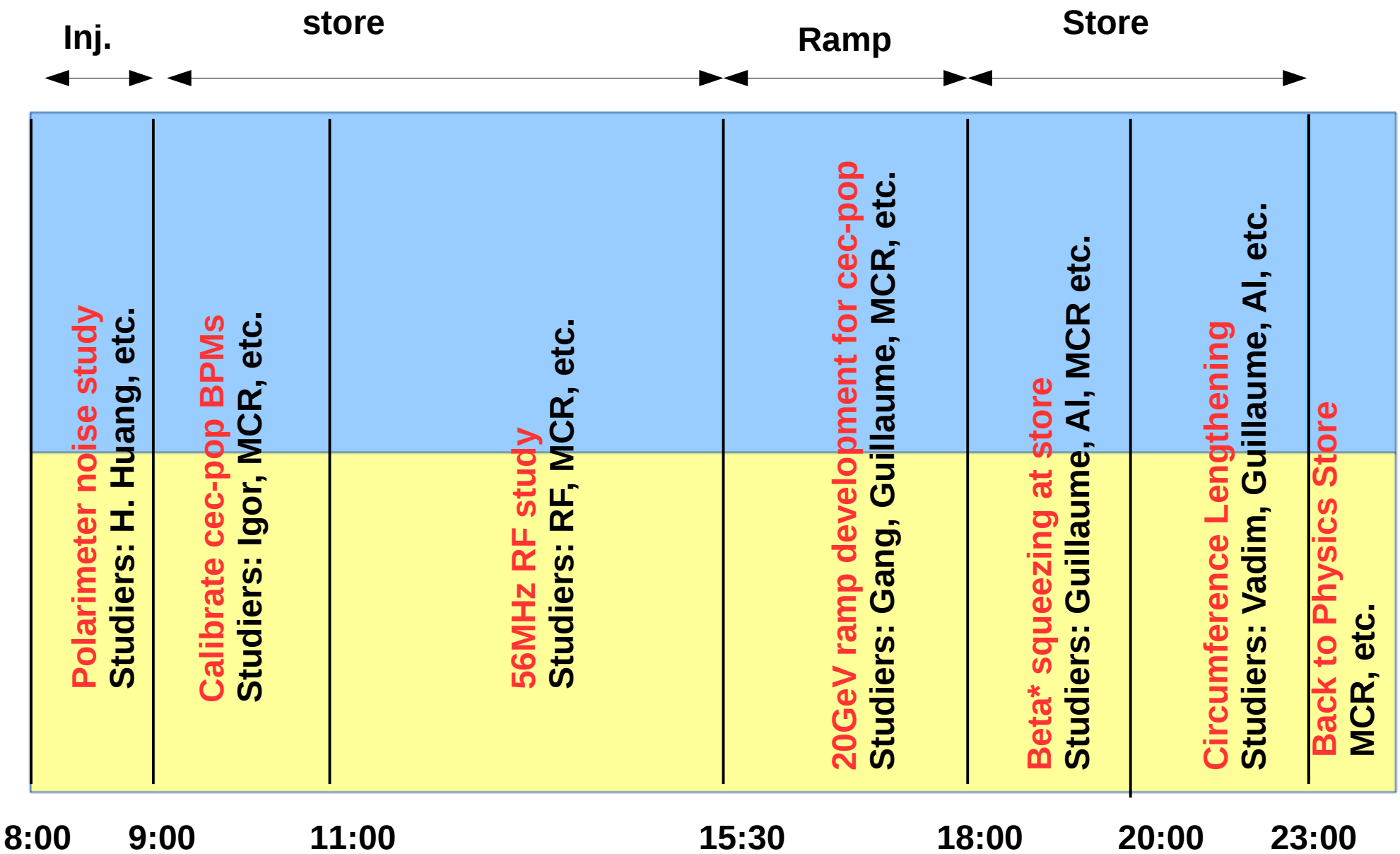
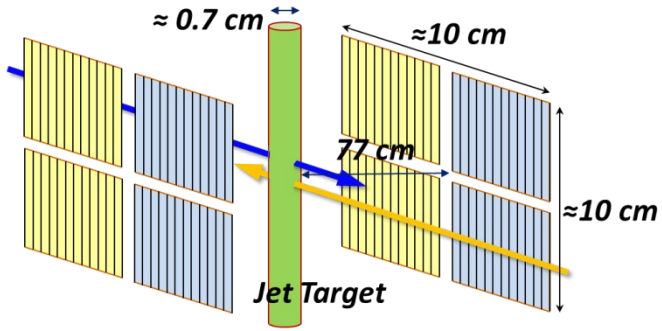
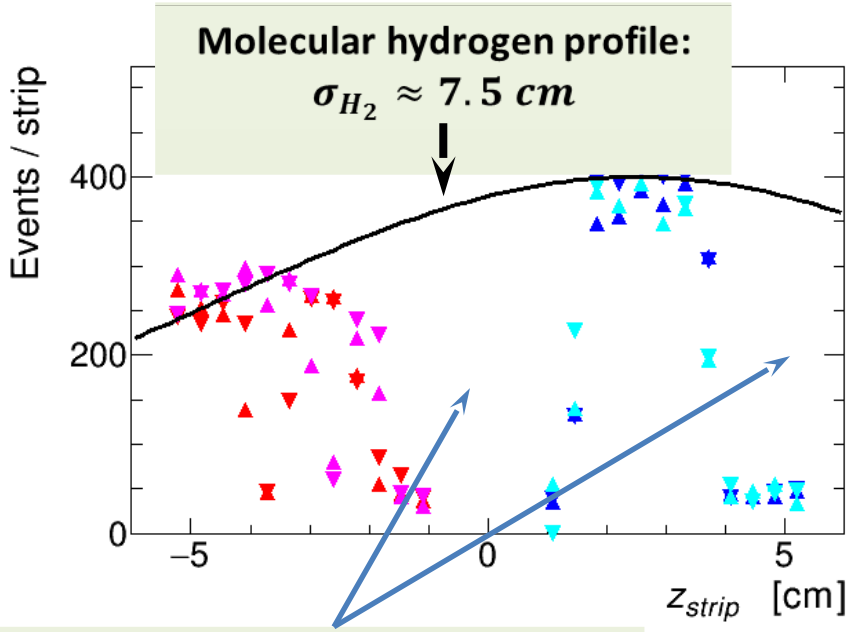
APEX Schedule for May 3, 2016



Experimental evaluation of the molecular hydrogen density in the H-Jet





Si strips are partially screened by the RF shield and collimators

Motivation:

Molecular hydrogen background is the main source of systematic errors in the HJet measurement of absolute polarization of proton beams at RHIC

Method:

For elastic scattering the energy spectra of recoil protons may be related to the proton density distribution at HJET:

Experimental setup:

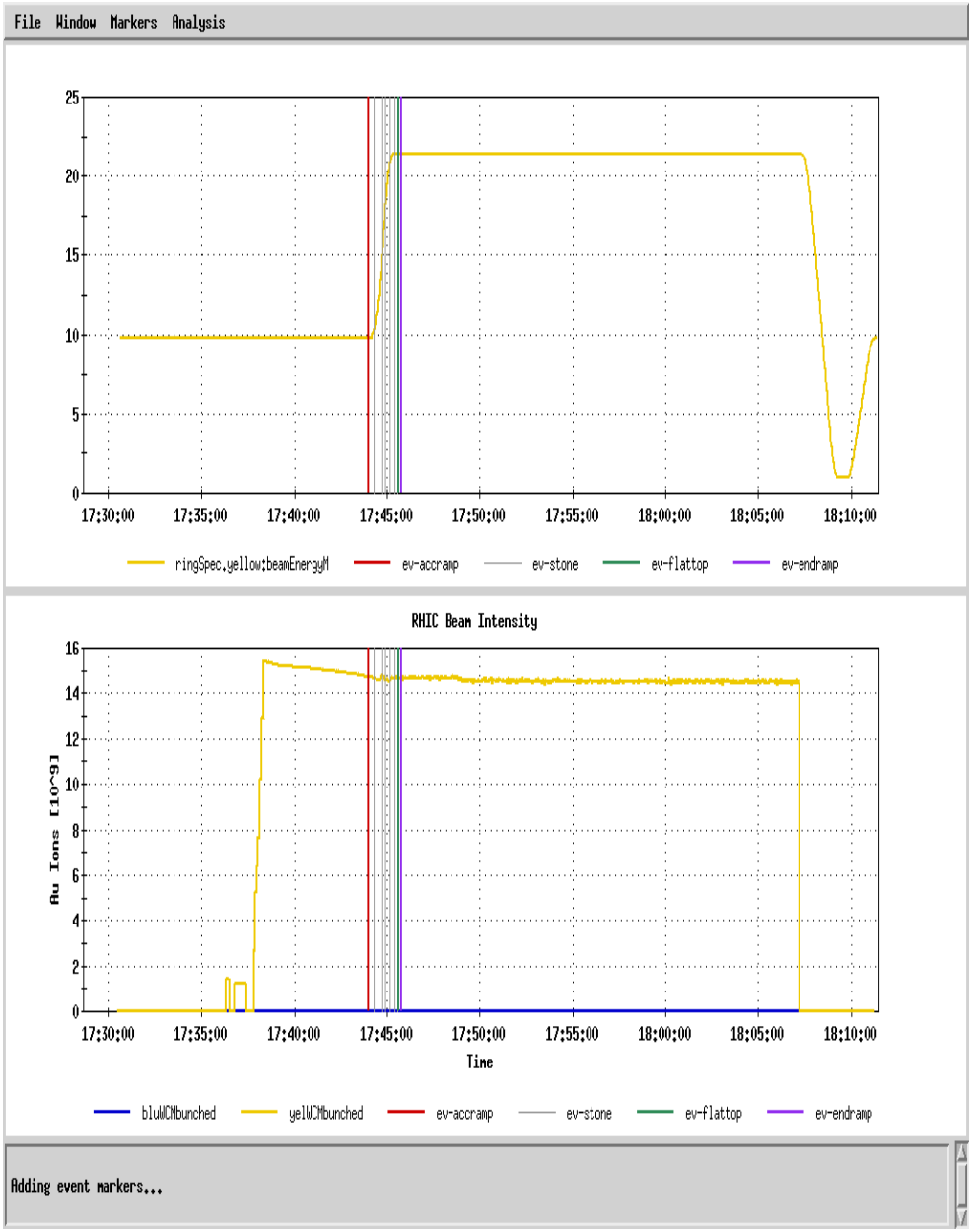
- Molecular hydrogen distribution was emulated by injection of hydrogen to the HJet chamber.
- Measurements with single Gold beam allows us to strongly increase the rate of elastic events and strongly suppress the inelastic background.

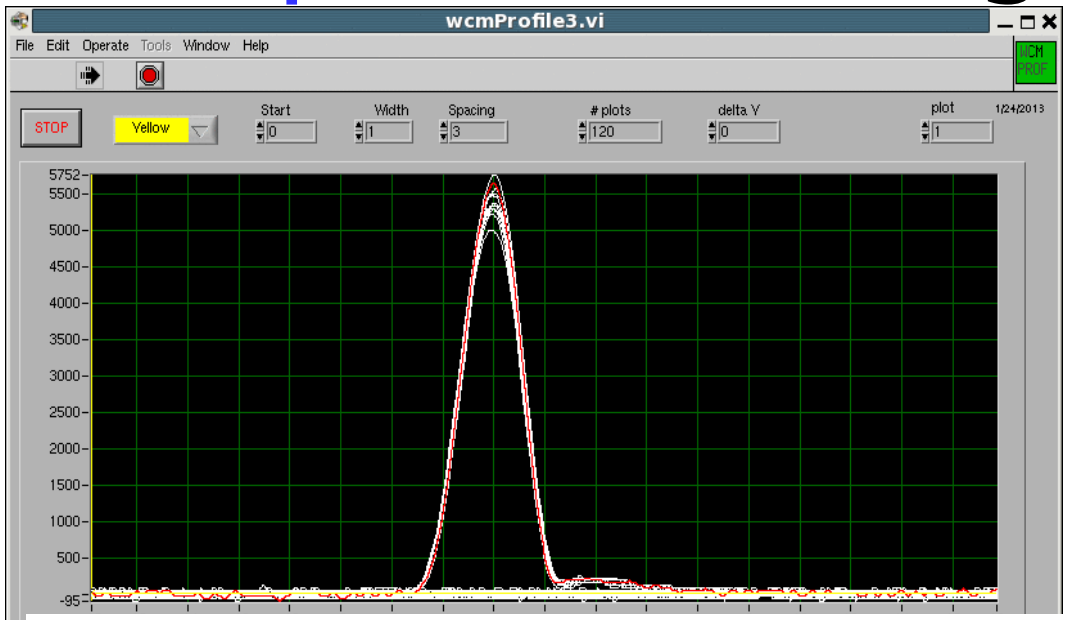
Results:

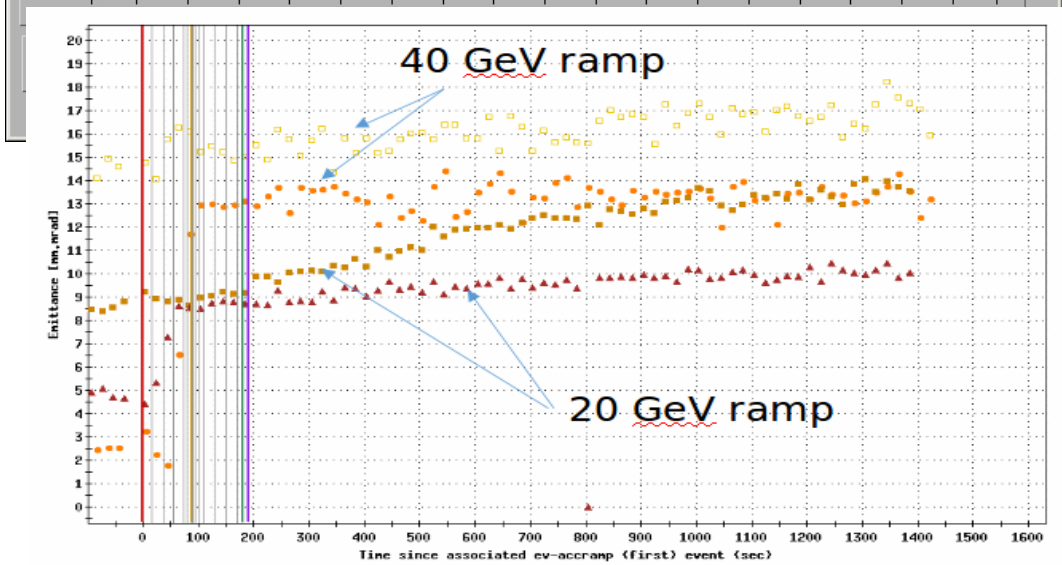
The molecular hydrogen spatial distribution is much wider than atomic polarized hydrogen Jet.

- A method of subtraction of such “flat” background is already developed.
- Screening by the RF shield and collimators has to be accounted in

20GeV Ramp Development: Gang





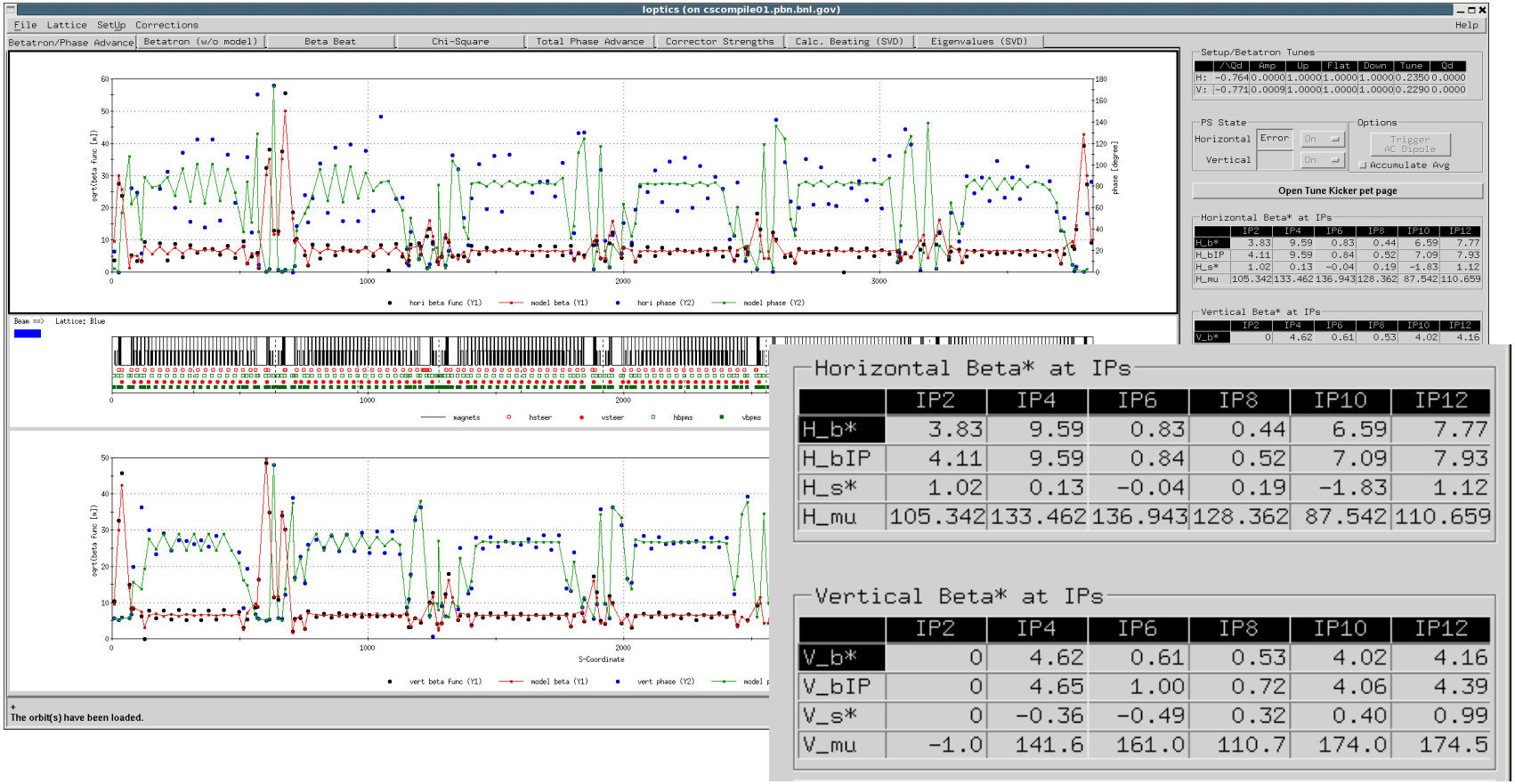


Beta* squeeze APEX – April 27, 2016 : Guillaume

- First attempt since diode repair; corrected magnet transfer functions (*k = f[current]*).

- Squeezing IR8 (PHENIX insertion) for the Blue lattice only, from 0.7 m to 0.5 m. 12x12 ramp to flattop using the operational ramps (au16-e0, Au16-s0); changed cogging at store to put the beams out of collision, allowing chromaticity measurements.

- Used Au16-thor to ramp to squeezed settings: succesful with 93.2% transmission efficiency! Tuned chromaticity setpoints, aiming at cleaner ramping on next attempt.



Horizontal Beta* at IPs

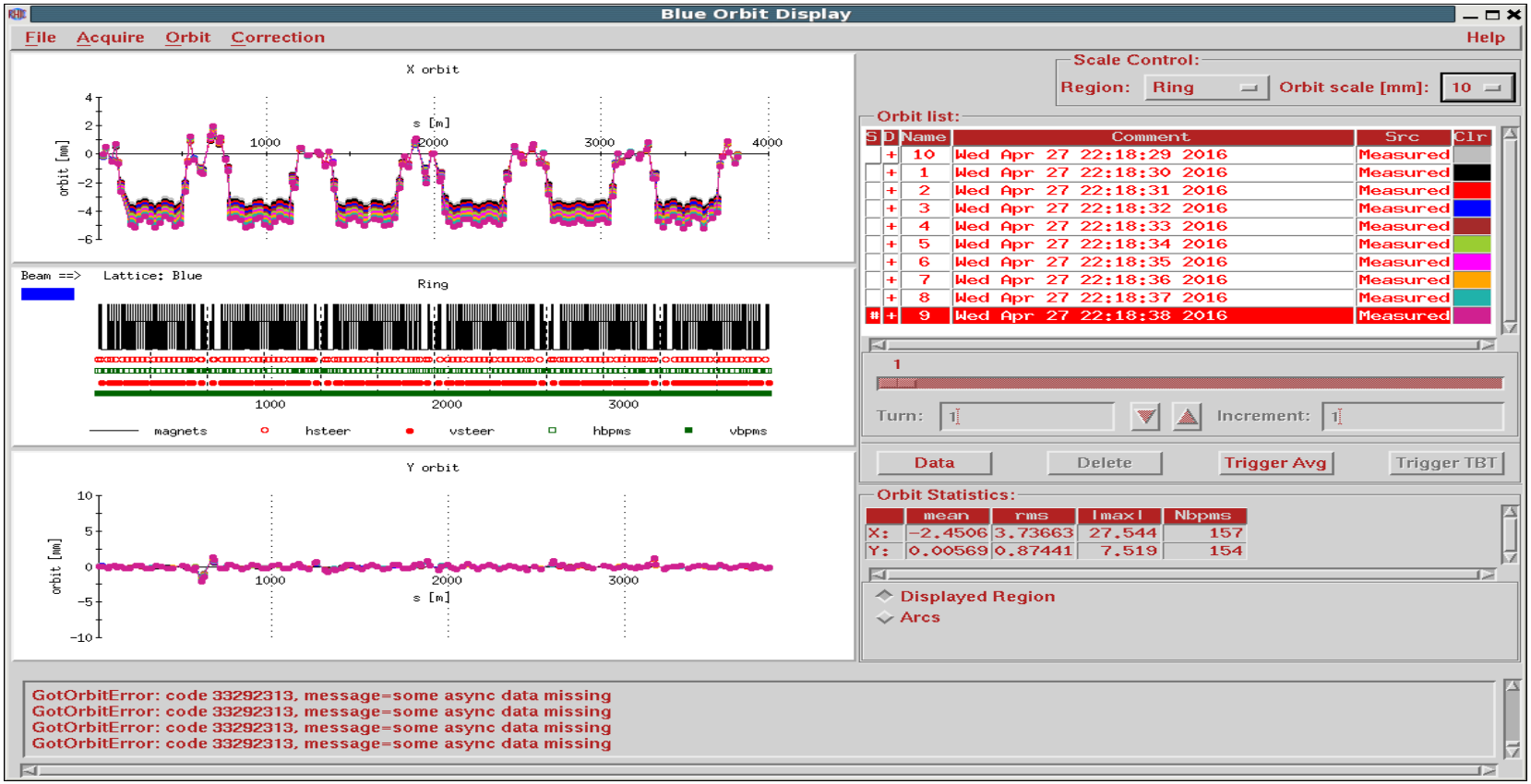
	IP2	IP4	IP6	IP8	IP10	IP12
H_b*	3.83	9.59	0.83	0.44	6.59	7.77
H_bIP	4.11	9.59	0.84	0.52	7.09	7.93
H_s*	1.02	0.13	-0.04	0.19	-1.83	1.12
H_mu	105.342	133.462	136.943	128.362	87.542	110.659

Vertical Beta* at IPs

	IP2	IP4	IP6	IP8	IP10	IP12
V_b*	0	4.62	0.61	0.53	4.02	4.16
V_bIP	0	4.65	1.00	0.72	4.06	4.39
V_s*	0	-0.36	-0.49	0.32	0.40	0.99
V_mu	-1.0	141.6	161.0	110.7	174.0	174.5

Circumference Lengthening: Vadim

- Two radial shift ramps were attempted. Beam survived up to -5mm radial orbit (as measured by the arc BPMs), but the problem with tune control was observed. The investigation is underway.



APEX Time Request from d-Au run

1) Recombination detector: Christoph, 15hours
2) Electron lens study: Xiaofeng, (1-2) * 4 hours
3) Circumference lengthening: Vadim, 3 hours
4) beta* squeezing, Guillaume, 2 hours
5) CeC-Pop experiments: Igor, ? Hours