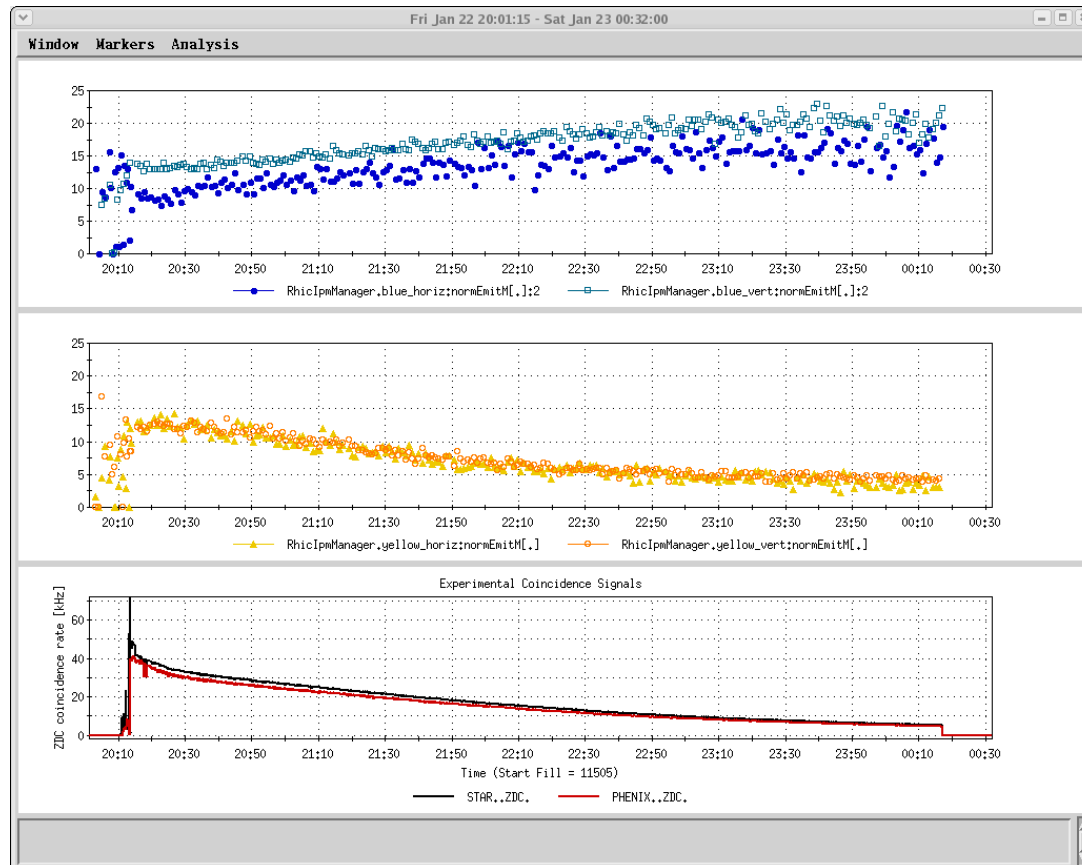# Run10 APEX - Beta* squeeze

G. Robert-Demolaize

Goal of experiment

- <u>Main goal:</u> use the effect of SC on emittance changes along a store to increase luminosity by dynamically reducing β^* (i.e. keep the ratio ε/β^* constant).
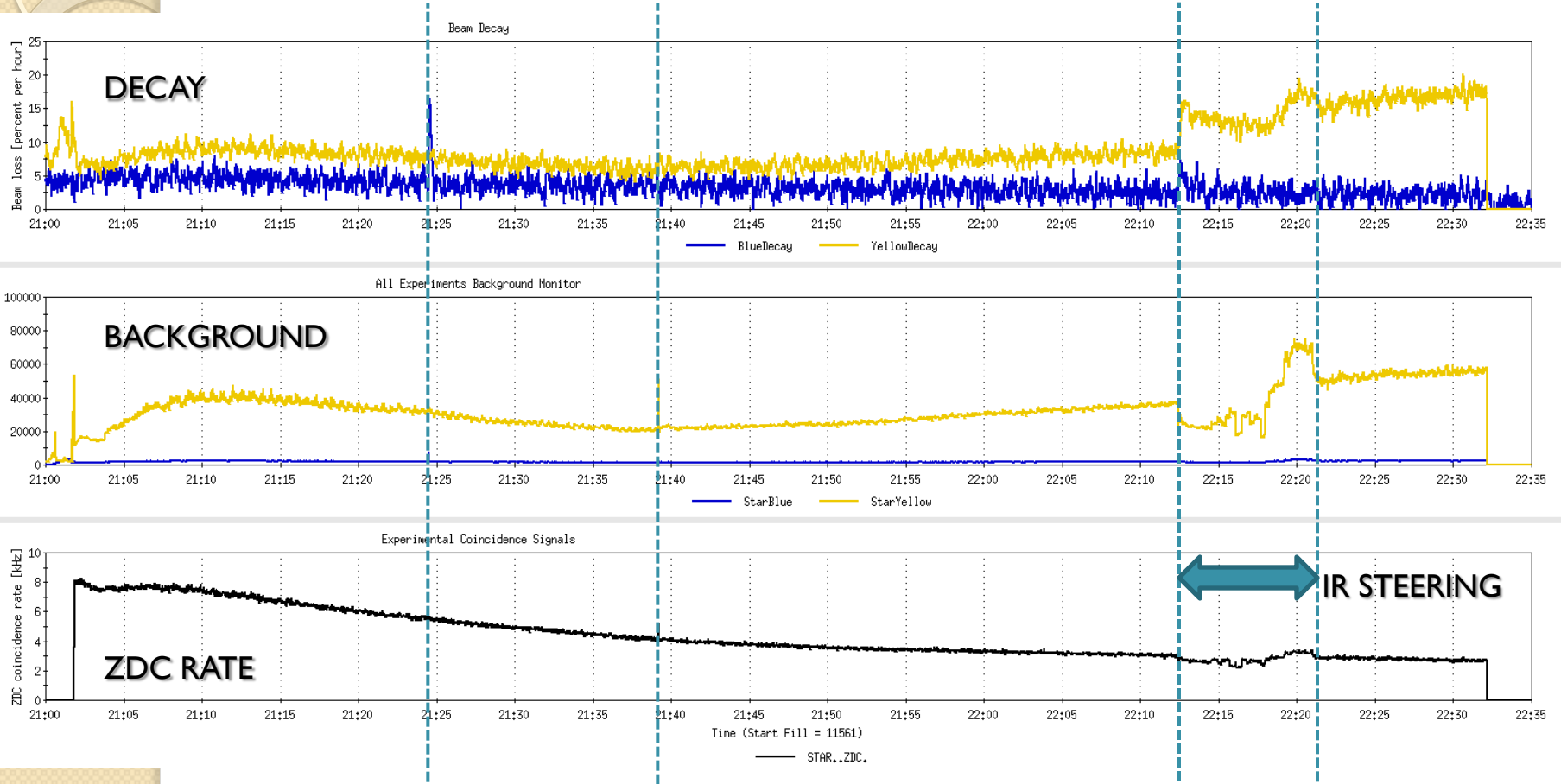
Goal of experiment

- <u>Main goal:</u> use the effect of SC on emittance changes along a store to increase luminosity by dynamically reducing $\beta*$ (i.e. keep the ratio $\varepsilon/\beta*$ constant).

- As opposed to last week's experiment, we kept both beams in the machine to check the effect of a Beta* change in IR6 on the STAR ZDC rates.

- With the change to Au104 ramp, and since Au103 was used for physics before, we attempted a squeeze from 0.7m to 0.6m, in successive steps.

- This APEX was actually combined to M. Bai's for optics measurement, in order to confirm that the "gymnastics" done with the model is actually doing what it is asked to apply.

Beam observables

DECAY

Beam Decay

BACKGROUND

All Experiments Background Monitor

ZDC RATE

Experimental Coincidence Signals

IR STEERING

Blue IR6, Beta* = 0.675m

Blue IR6, Beta* = 0.625m
Yellow IR6, Beta* = 0.6m

Yellow IR6, Beta* = 0.68m

Model calculations

Beam	Target IR6 Beta*	Final IR6 Beta*
Blue	0.65	0.65219
Blue	0.675	0.67499
Yellow	0.675	0.68712
Yellow	0.675	0.68773
Yellow	0.68	0.68867
Blue	0.6	0.63729
Yellow	0.6	0.66454
Blue	0.625	0.63530

Lattice	IR6 as of Model	IR6 as of Loptics
Blue Au104 squeezed	0.635302	0.79
Blue Au104	0.69859	0.83