

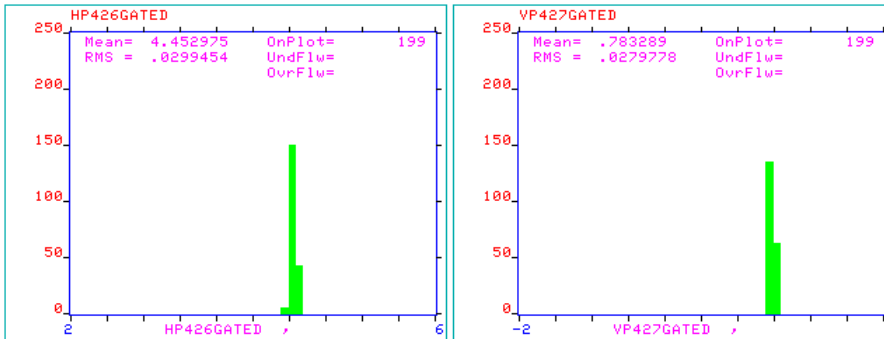
f

# RR Studies Review

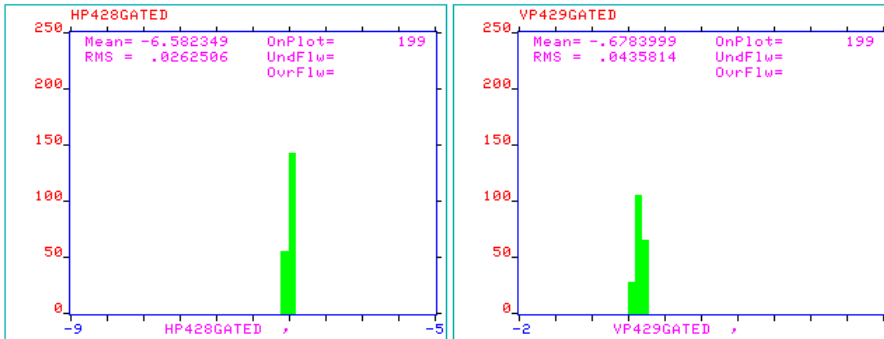
- Aperture scans – momentum & transverse
  - Increase admittance
  - Center orbit
- Optics
  - Set chromaticity
  - Decouple tunes
  - Adjust injection/extraction closure
- What's next?
  - Antiproton transfers
  - Continuing studies

f

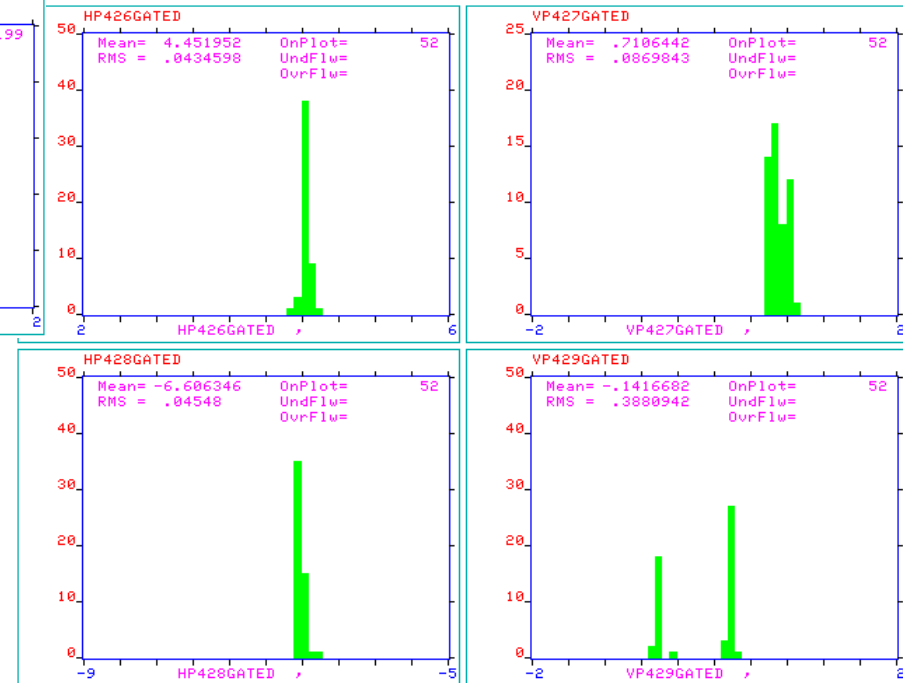
# Centering – Phase Trombone



QT603 does steer the beam.



QT601 does *NOT* steer the beam.

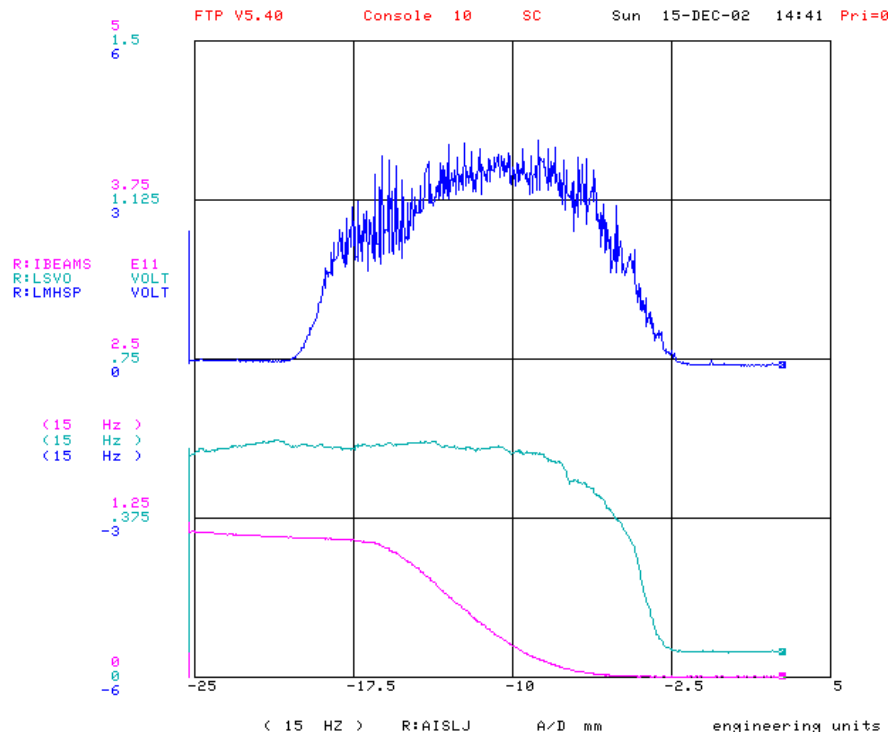


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# Admittance Measurement

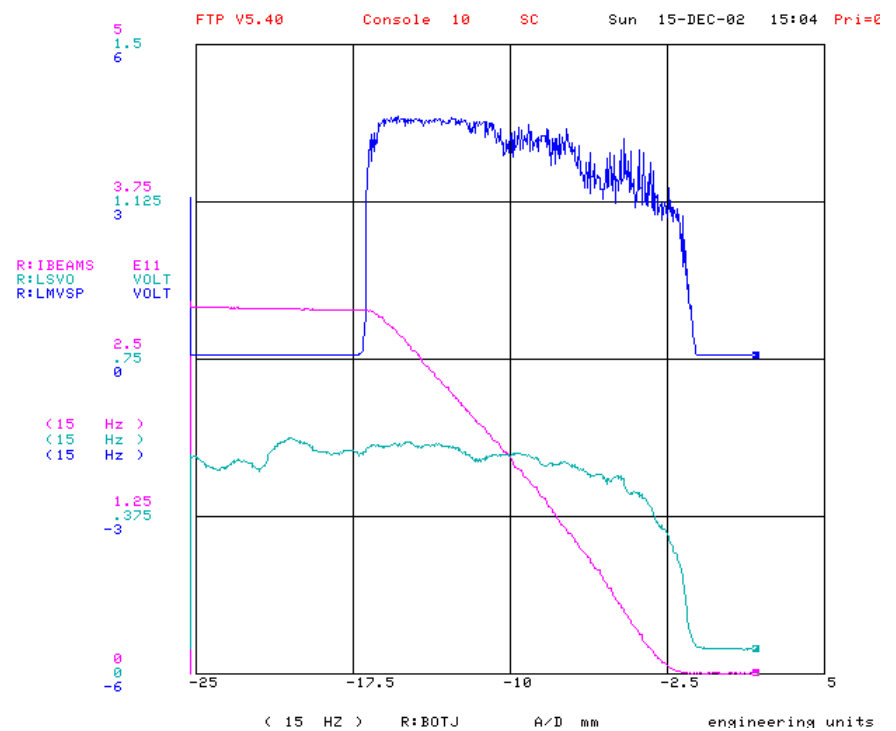
## Normalized

### Horizontal



$64\pi$

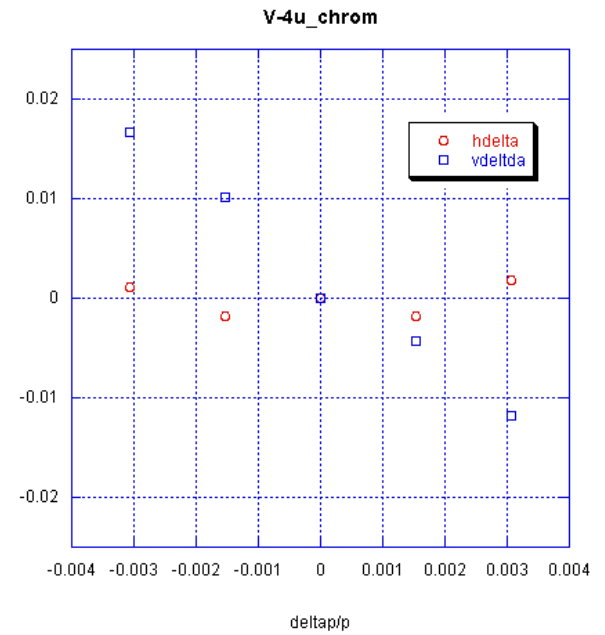
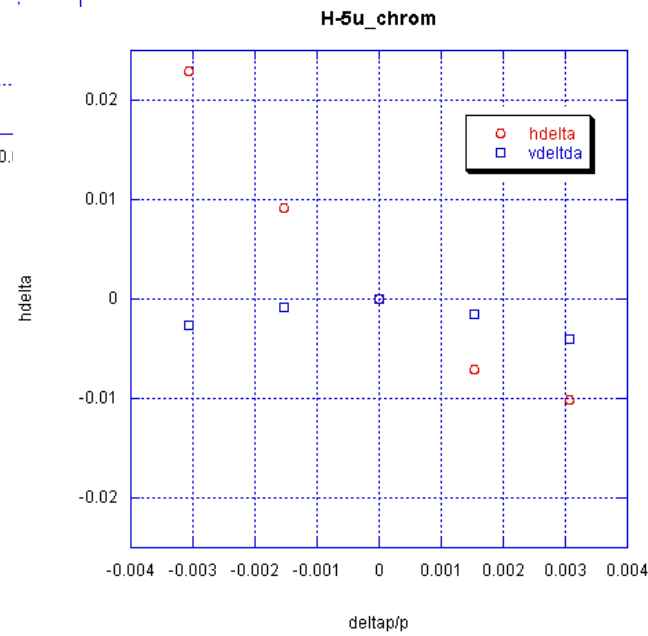
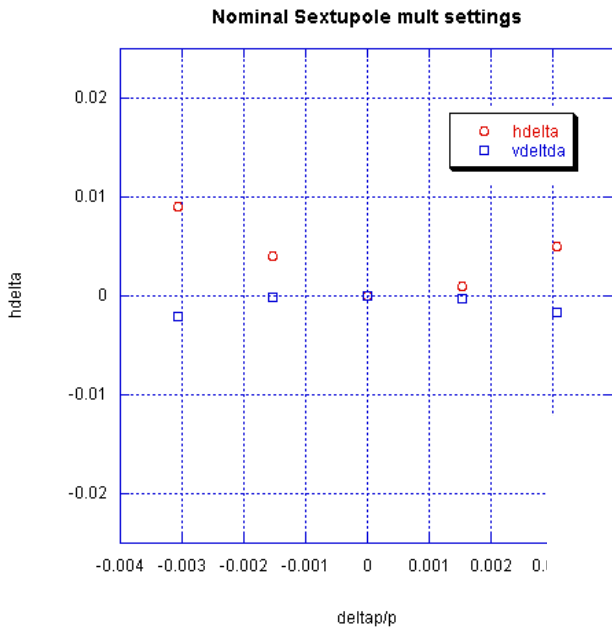
### Vertical



$46\pi$

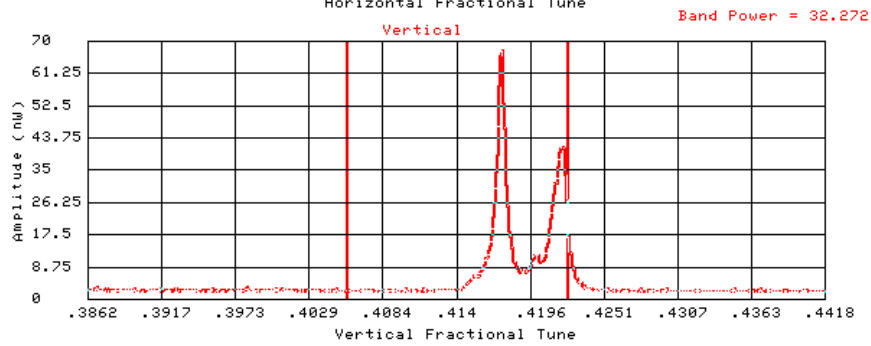
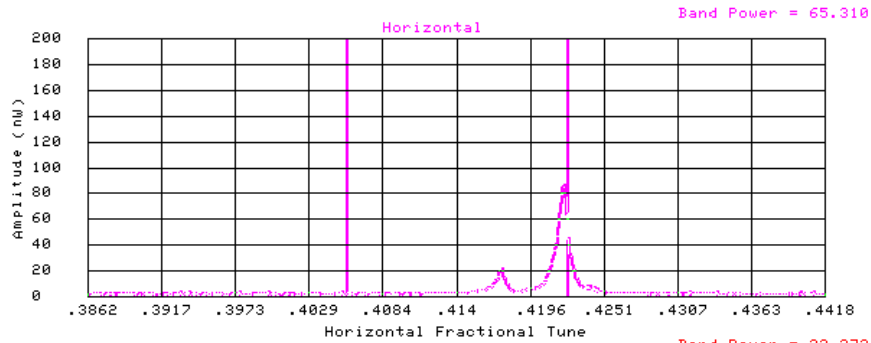
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# Chromaticity Measurement

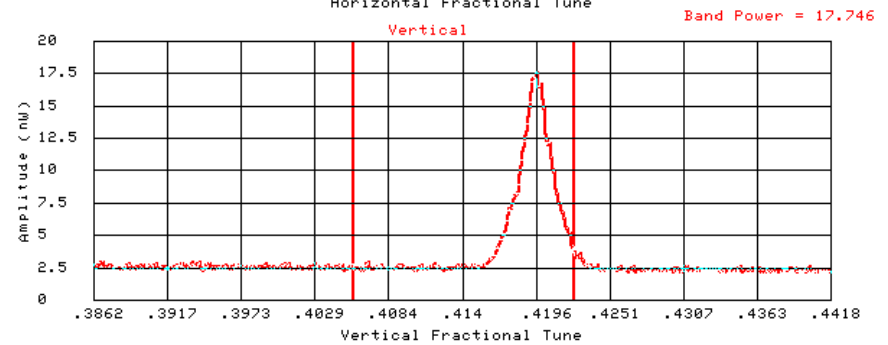
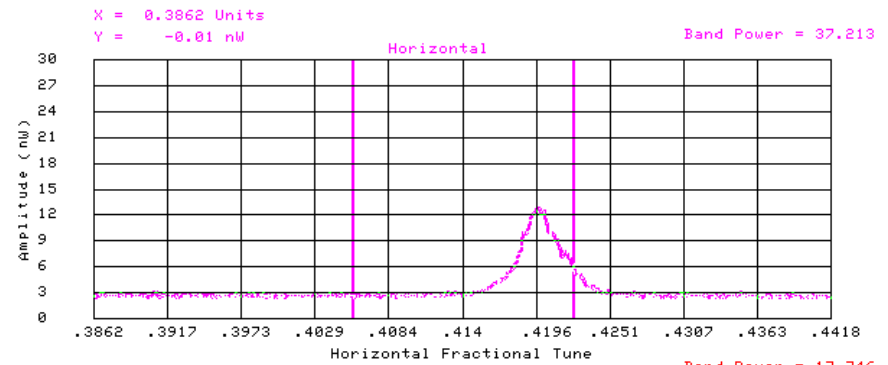


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# Decouple Tunes



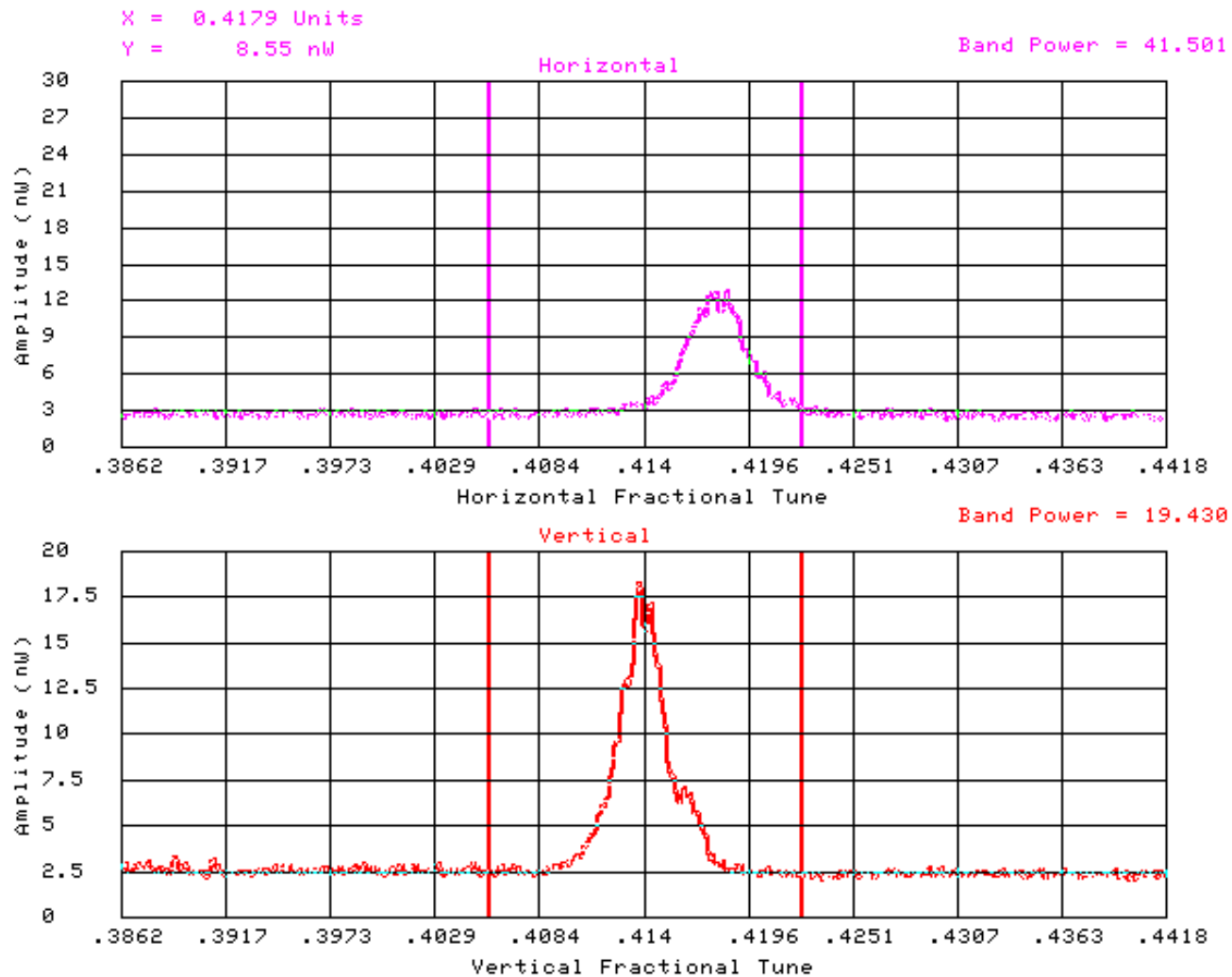
Same tune



Tunes with  $\xi = -2$

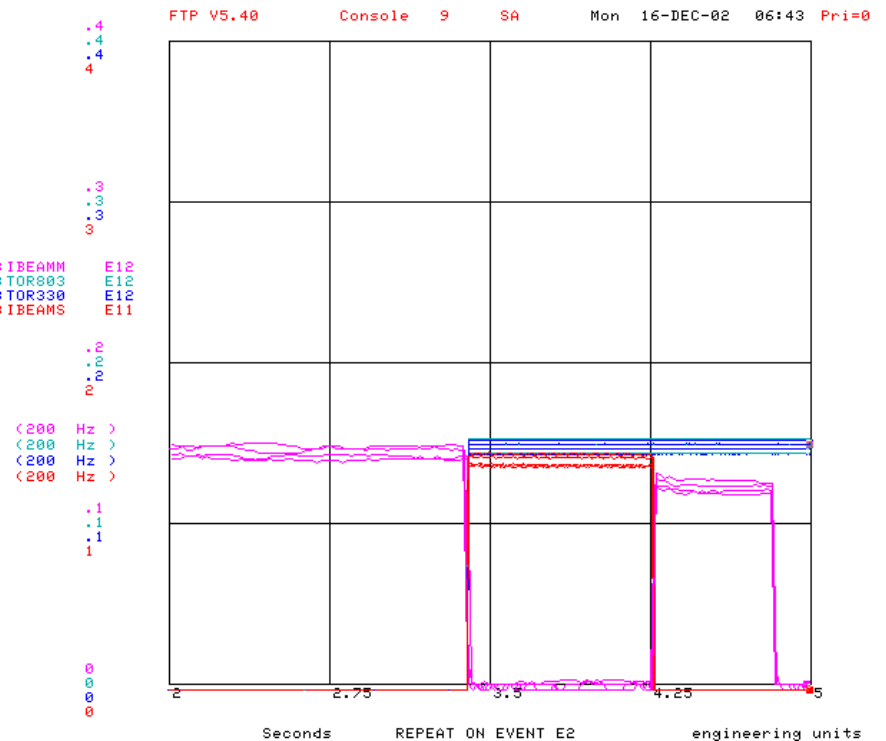
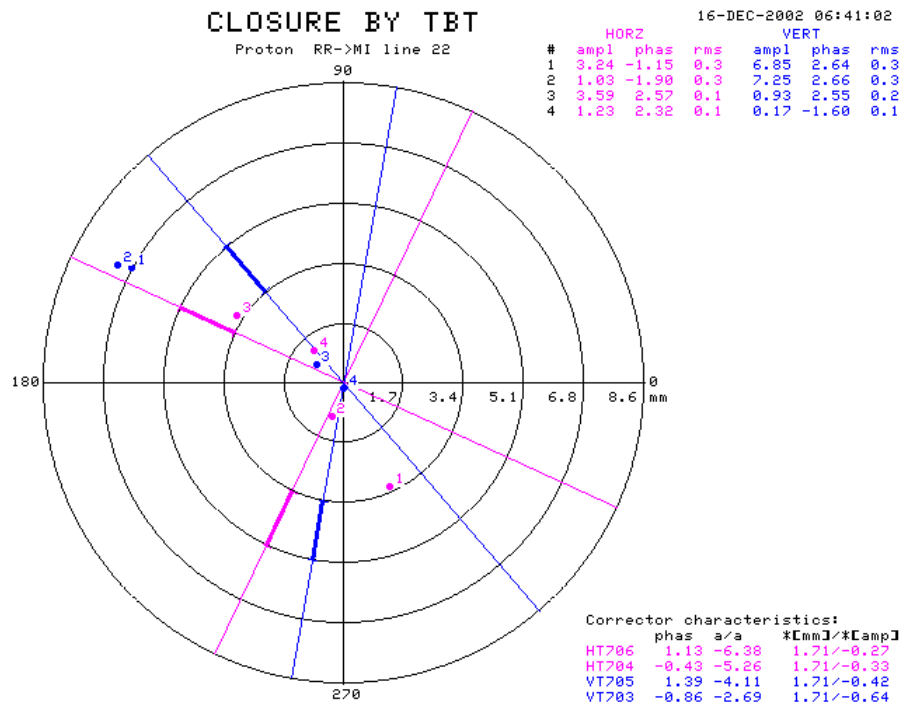
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# Golden? Tune Settings



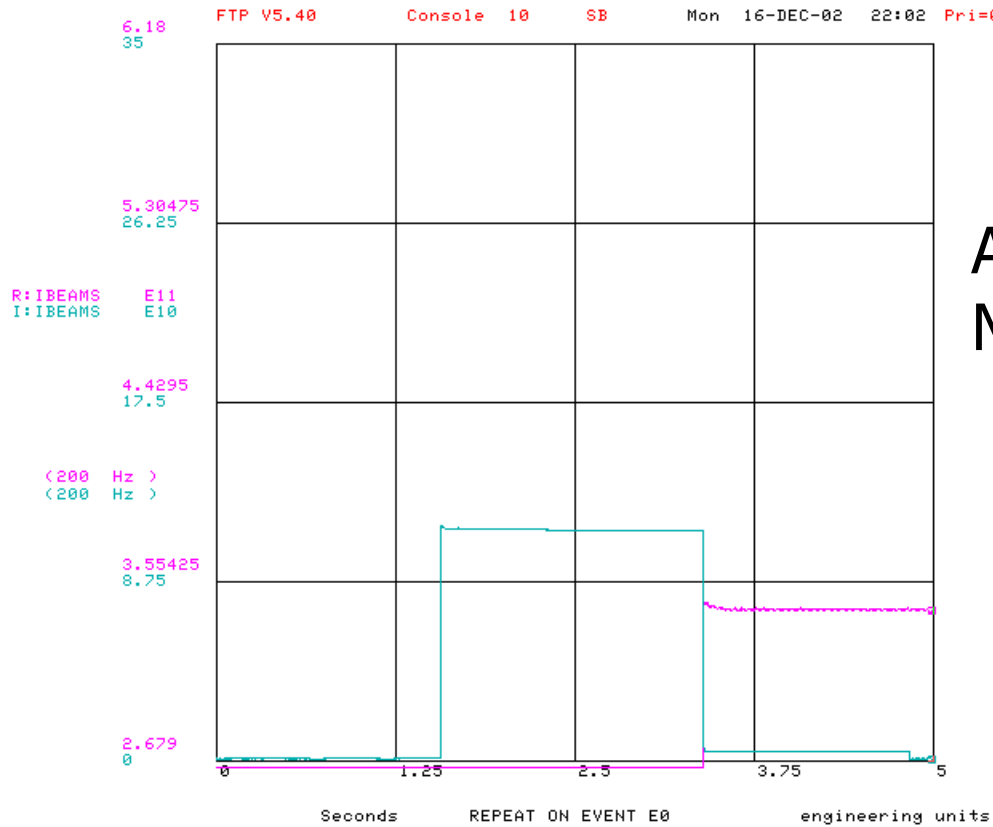
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# Injection Closure & Efficiency



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# Antiproton Transfers



Antiproton transfer by  
MCR crewmember.

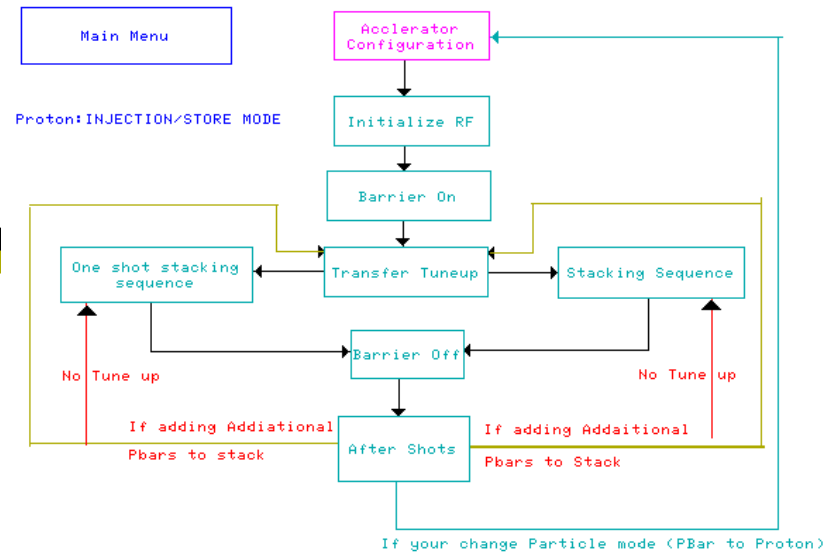


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# Antiproton Transfer Mechanics

18-DEC-02 11:53:04

## Recycler Sequencer Aggregate states



```

R48 RECYCLER SEQUENCER 18-DEC-02 11:52:21
mode edit log status files
aggregate commands BPM studies
::: CHECK BULK SUPPLIES
ERR Prepare for tunnel Access
ERR cycle cooling on/off/on

::: ---Operational Aggreates---
::: Graphics display
::: Accelerator Configuration
::: Initialize RF
::: barrier on
ERR Transfer tuneup:Protons
-> Stacking Sequence
::: One shot Stacking sequence'
::: barrier off
::: After shots
::: Stash Extraction Sequenc

::: ---Studies Aggregates---
ERR Scraping beam measurements
ERR Transfer setup
ERR Proton Store mode

4:23 of 32
Messages
SEQUENCER: (mode 12) begins on console 112 slot PA
UTIL: failed to read run number DPM_PEND

::: INSTRUCT 56
::: ACKNOWLEDGE
::: SET_DEVICE V:RRMOD 10
::: SET_DEVICE V:RSHOOT 01
::: SET_DEVICE V:RMODE 4
::: ACL RLLRFCONG_P
::: SET_DEVICE G:TLGRR 9
::: ACL RRRFSTATECHK
::: EVENT EC TRIGGER
::: WAIT_DEVICE R:FLLFES
::: SET_DEVICE G:TLGRR 00
::: WAIT_FOR SECS 5
::: INSTRUCT 50
::: LOOP BEGIN:PULSE 00
::: EVENT E7 TRIGGER
::: WAIT_FOR SECS 5
  
```

Illegal character found!

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# Call In Shifts

	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>	<i>Sun</i>
	16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec
<b>0200 - 1400</b>						VW	DRB
<b>1400 - 0200</b>						KG	BCC
	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>	<i>Sun</i>
	23-Dec	24-Dec	25-Dec	26-Dec	27-Dec	28-Dec	29-Dec
<b>0200 - 1400</b>	KG	MH		DRB	VW	VW	DRB
<b>1400 - 0200</b>	AM	BCC		MH	AM	KG	BCC

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## Continuing Studies

- Beamline transfer – Alberto
- Antiproton beam extraction – Chandra
- Large antiproton stash – Gounder
- Longitudinal Heating/MI induced orbit motion

To paraphrase JPM:

*Your name attached to these studies implies you know what needs to be done, can write detailed study plans, organize the data, analyze the data and write a MI note. NOT that you do all the work.*

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## Beamline Transfer

Not in any particular order...

- Lambertson position
- Counterwave amplitude
- Kicker voltage
- Beamline position
- Emittance  $\varepsilon_H, \varepsilon_V, \Delta p/p$
- Lattice matching

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## Beam Extraction

- $\epsilon_L$  of stash
- $\epsilon_L$  prior to 2.5MHz bunching in RR
- $\epsilon_L$  after 2.5MHz bunching in RR
- $\epsilon_L$  after transfer to MI
- $\epsilon_L$  after 53MHz bunching in MI

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## Large Stash

- Emittances
- Lifetime vs. tune, chromaticity, etc.
- Emittance growth rates
- Cooling times
- Tune shift vs. clearing electrodes, rf voltage, gap length
- MI on/off

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I want to understand this.

