Collimation on the Ramp

Or before?

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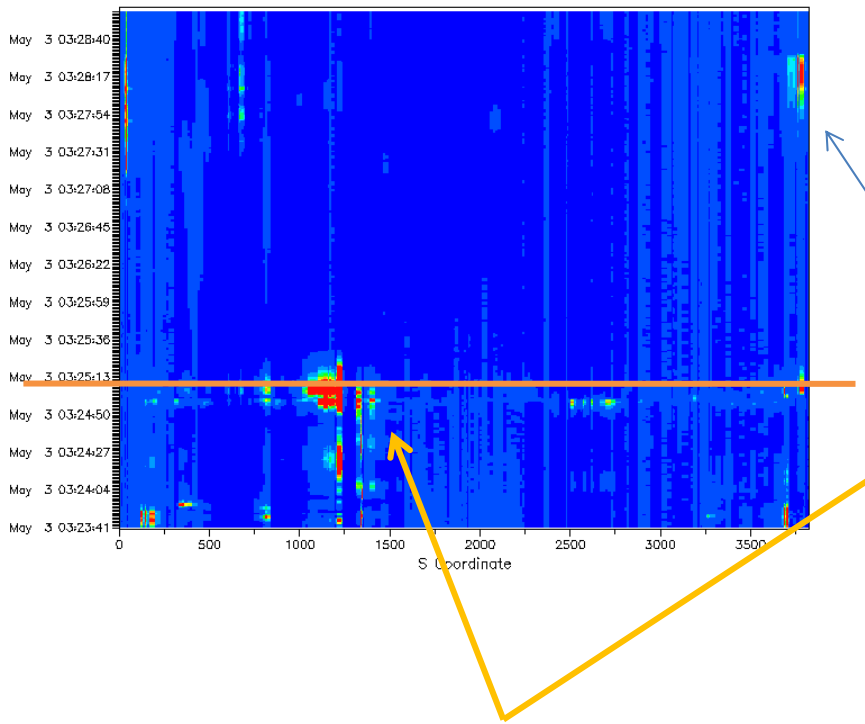
Situation

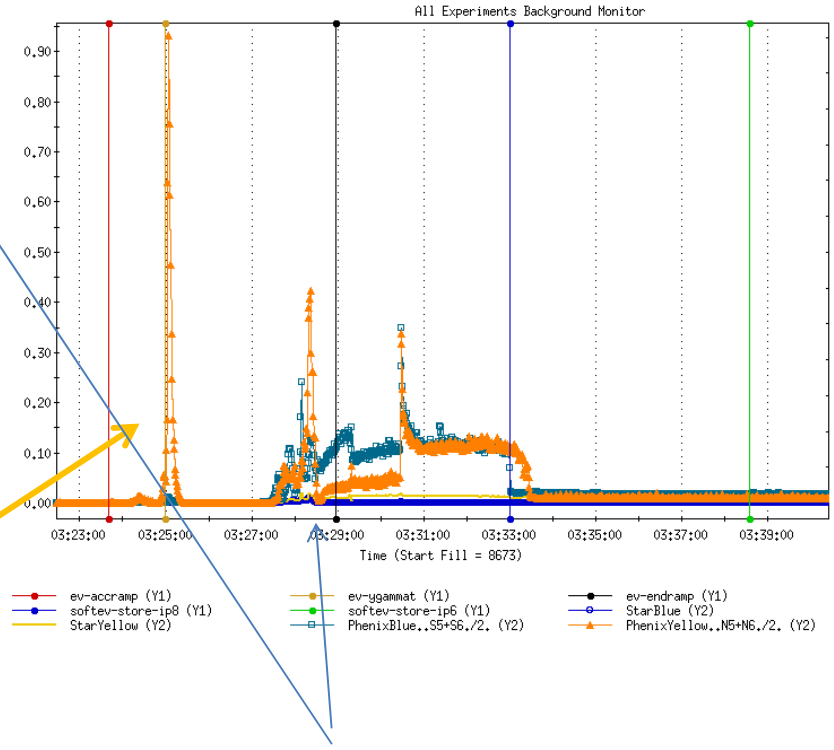
- Losses during the ramp could cause quenches
- Losses during the ramp could cause aborted ramps and loss of time even w/o quenches
- Halo cause high experimental backgrounds early during the store
  - Collimation during early store is time consuming and potentially dangerous (could loose store)
- It would be beneficial to contain losses in a shielded area

Typical Ramp FY07 (Au)

BLM Ring Avg. 1Hz (on the ramp)

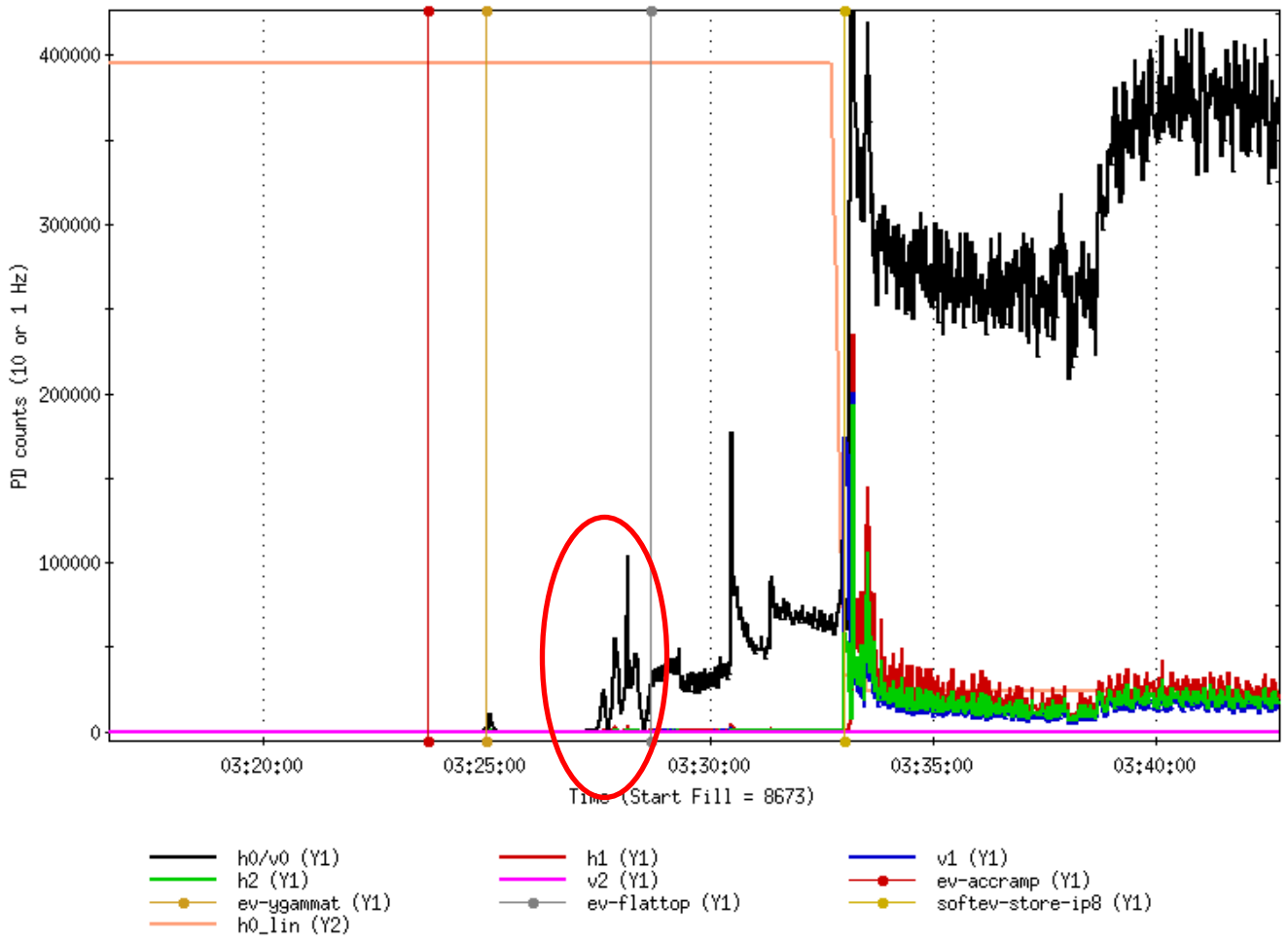
Exp. Background Signals during the ramp and early store





Losses at transition

losses during the squeeze



Pindiode signal on the ramp (8673)

Practically no losses during the ramp but at the end of the squeeze. Could collimators be positioned such that they help taking away losses from scraping during the ramp? Orbit changes are fast (and large) at the end of the ramp.

Collimation at Injection

- Start to collimate at injection with one beam in the machine (machine setup mode)
- Repeat with other ring/species (machine setup mode)
- Determine how much halo is created during the ramp (collimate before and after)
- Operation (depending on results);
  - Bring in blue collimators while yellow is filled
  - Bring in yellow collimators during early ramp
    - Determine requirements on orbit stability in early ramp

Collimation during the ramp

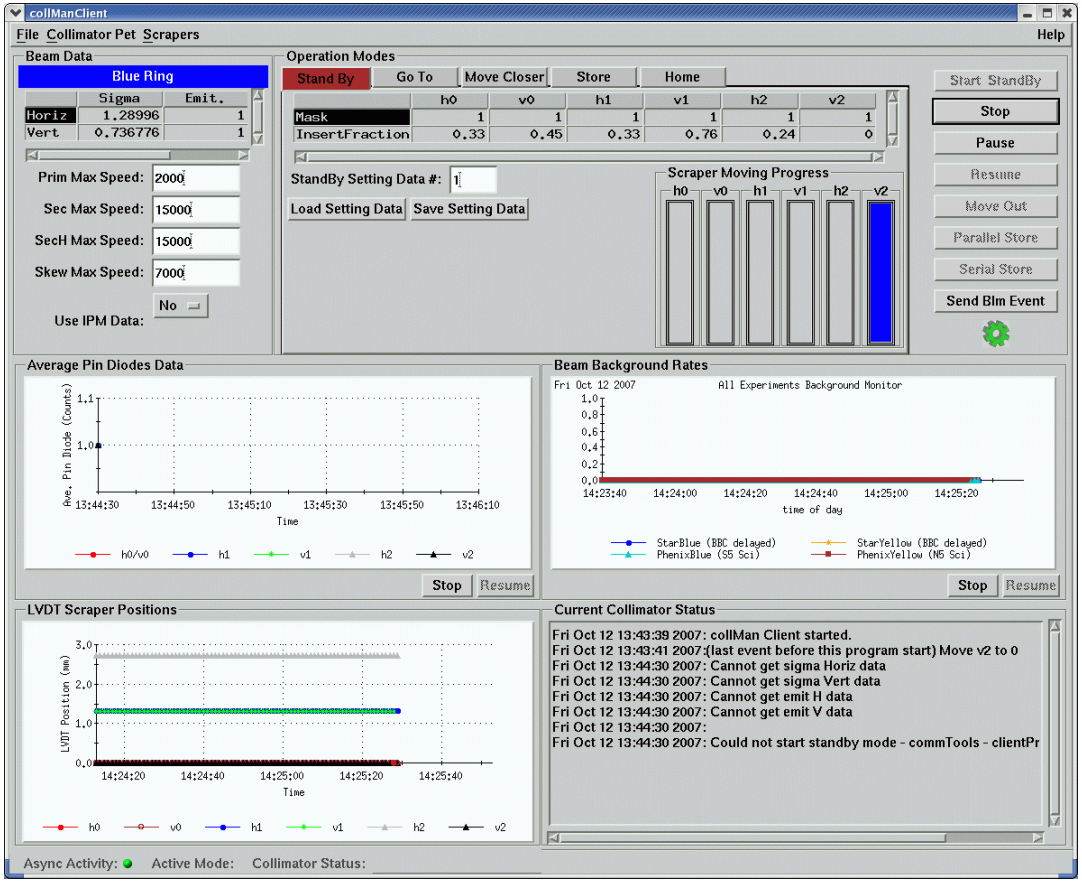
- Was done once, so what's the big deal?
  - Much less beam intensity, relaxed BLM thresholds
  - Constant collimator positions during the ramp
- If halo is created during the ramp and collimation during squeeze looks beneficial:
  - Bring in collimators and keep them there
  - Move beam to collimators (or keep stable in that area)
    - Determine requirements on orbit stability
    - What residual movement is allowed/how close should collimators be?
    - Need APEX time to try things out

Collimator Manager

Implementation:

Add another “tab” for position of collimators during the ramp

Add another “tab” for position of collimators at injection



Proposal

- Try collimation at injection first
  - Determine how much halo is created during the ramp and if species dependend
  - Determine time needed to bring collimators into position and required orbit stability
  - Make operational (APEX?, update manager)
- If needed, collimate during the ramp
  - Determine orbit stability needed
  - Determine time needed to move collimators
  - Keep beam stable in that area (APEX?)
  - Make operational (update manager)