Emittance growth studies using static bumps in the ATF EXT line

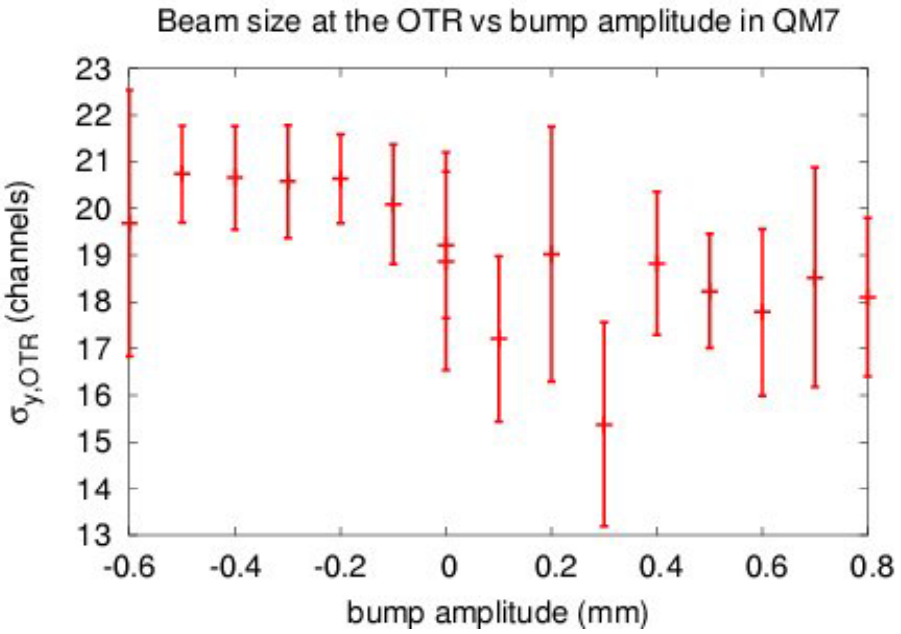
Analysis of the results from 22nd May 2008 shift

10th June 2008

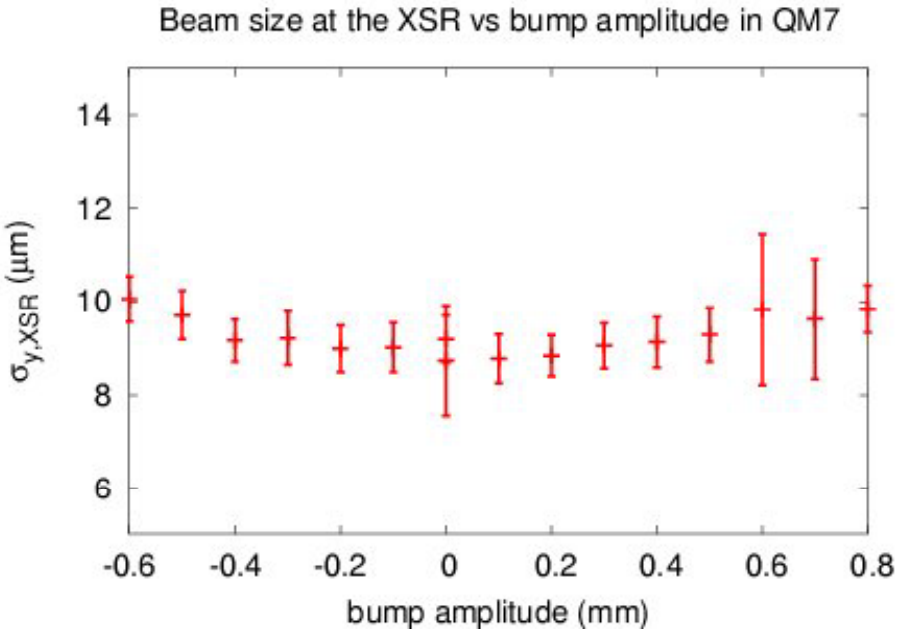
Emittance growth studies using static bumps in the ATF EXT line

Shift Thursday 22nd May 2008

Extraction Line (OTR)



Damping Ring (XSR)



- The beam was oscillating due probably to some energy jitter.
- Error bars corresponds to the standard deviation of the measures.

→For the OTR error bars must be overestimated due to the energy jitter.

- The beam was tilted in the screen of the OTR → need to subtract a factor in the beam sizes
- And need to multiply by a factor ~1.6 to convert OTR beam sizes to μm

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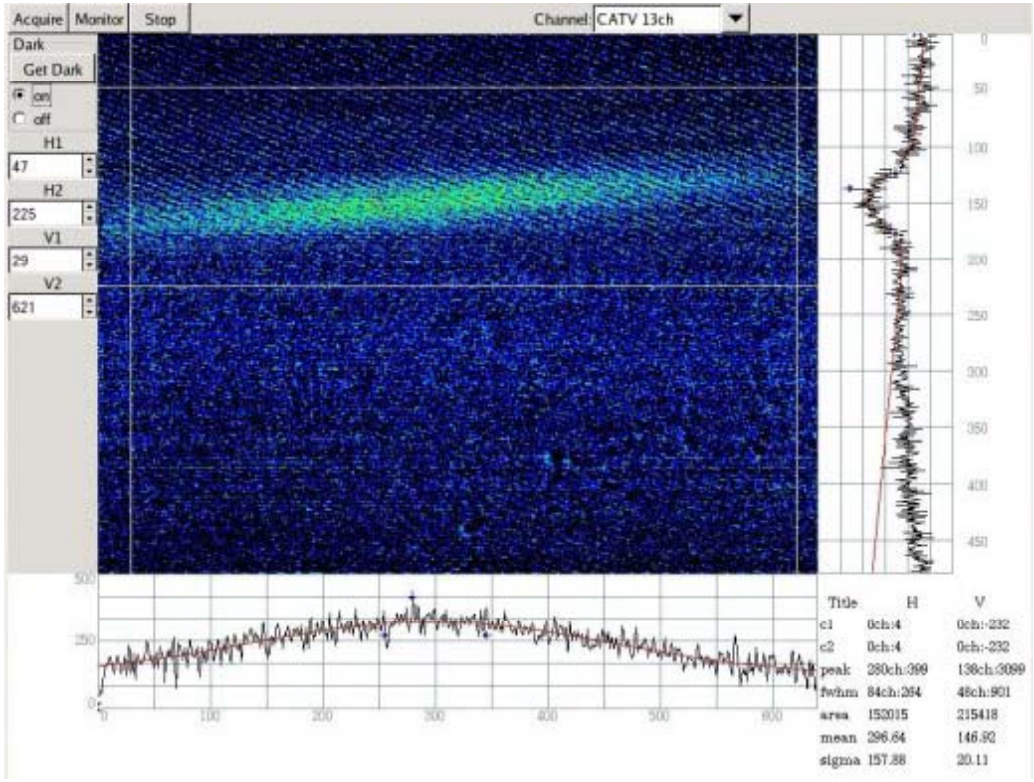

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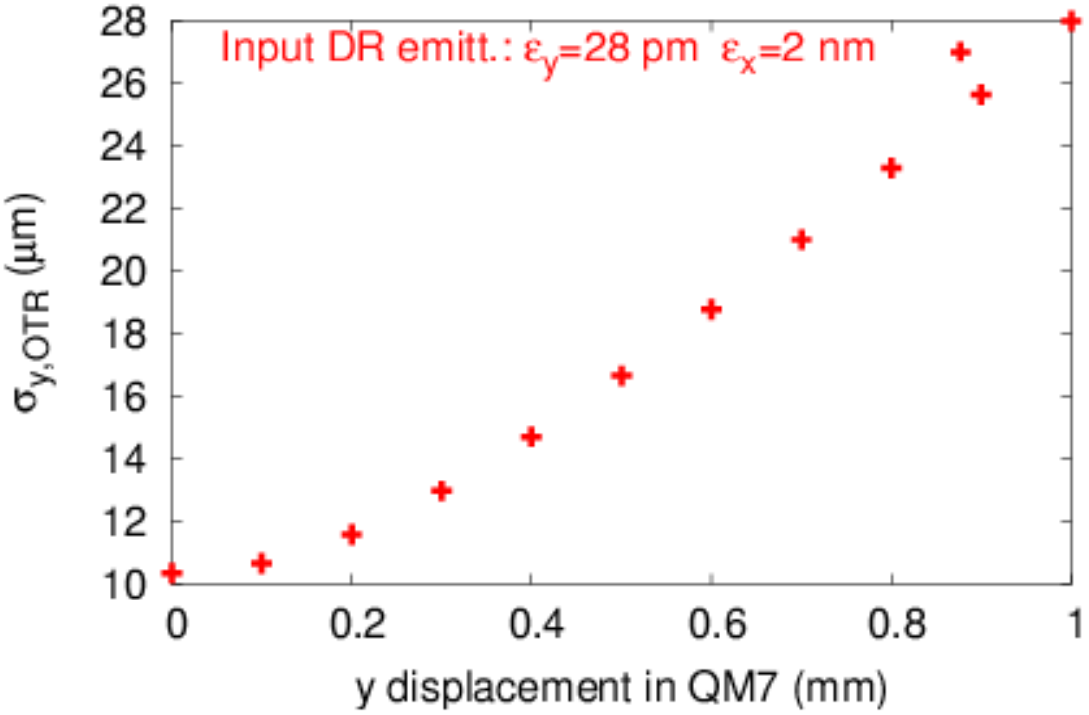
Tracking simulations in the Extraction Line

- With bumps created with ZV9R and ZV100R
- Including non-linearity in QM7
- For different input emittances

DR emittances during the shift computed from beam sizes and ß-functions at the XSR:

ε_y=28 pm ~ 2.3*$\varepsilon_{y,nom}$
ε_x=2 nm ~ 1.7*$\varepsilon_{x,nom}$



But the beam sizes at the OTR have not significant increase with the bump amplitude, and are about 15 μm.

Check if with the input Twiss parameters measured during the same shift, we obtain ~15 μm beam size at the OTR.