

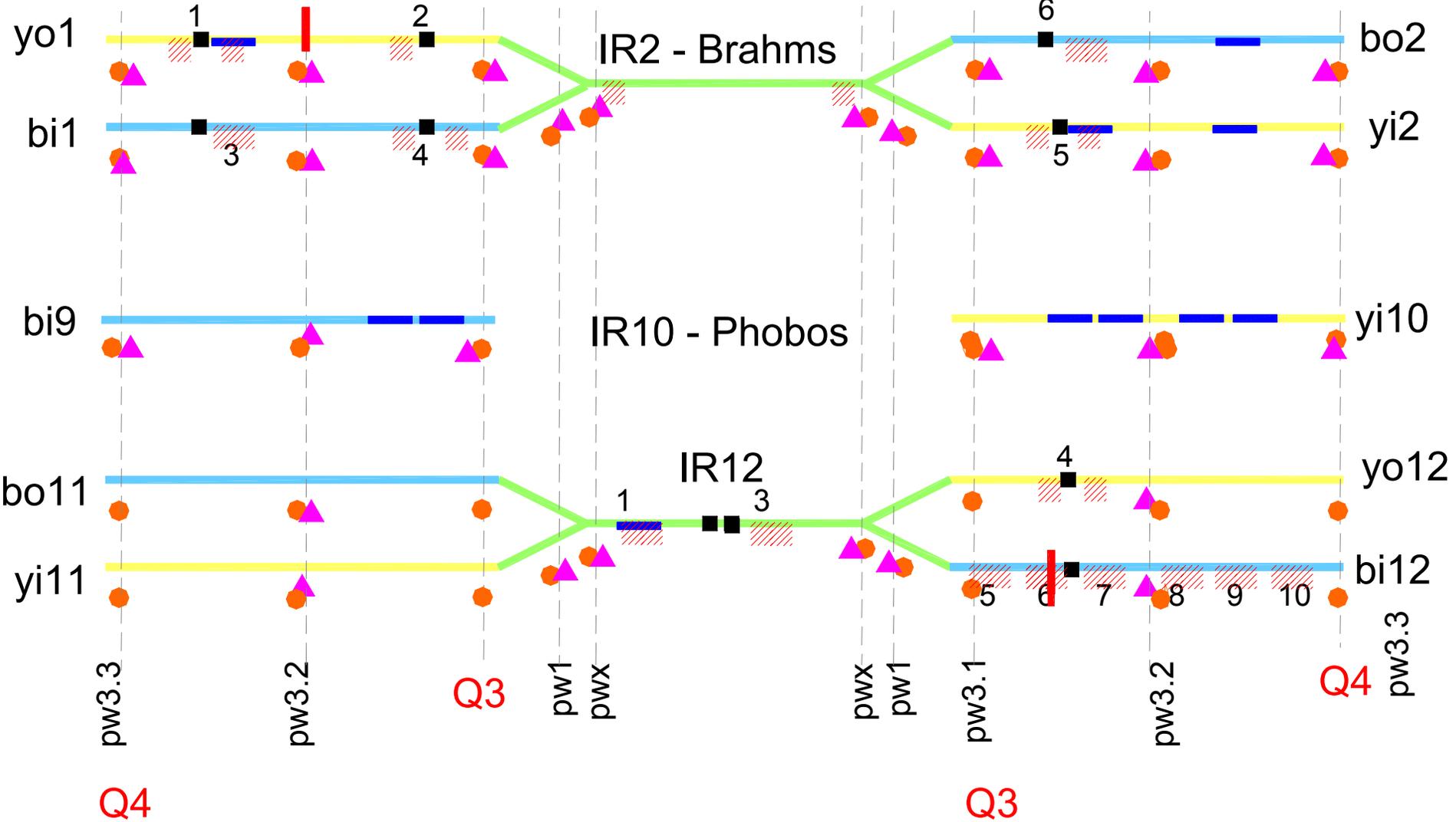
NEG Pipe Study (2/4/04)

- The experiment took about 3 hours.
- Generate 4-bump with peak at Q4 of yi10, yo12, yi2 and bi9.
They have similar lattice but with/without NEG pipes.
The vacuum level at pw3.2 for the four IRs are similar:
 3×10^{-11}
- The idea is to generate beam loss locally around these vacuum gauges and correlate the pressure rises with the beam loss for NEG pipes and regular pipes.
- The key is to keep same beam parameters (intensity, bump amplitude/beam loss) for these locations.
- Procedure: monitor vacuum gauges at one location.
 - Inject one bunch and ramp the bump amplitude with slow factor 40.
 - Repeat the process with 55 bunches.

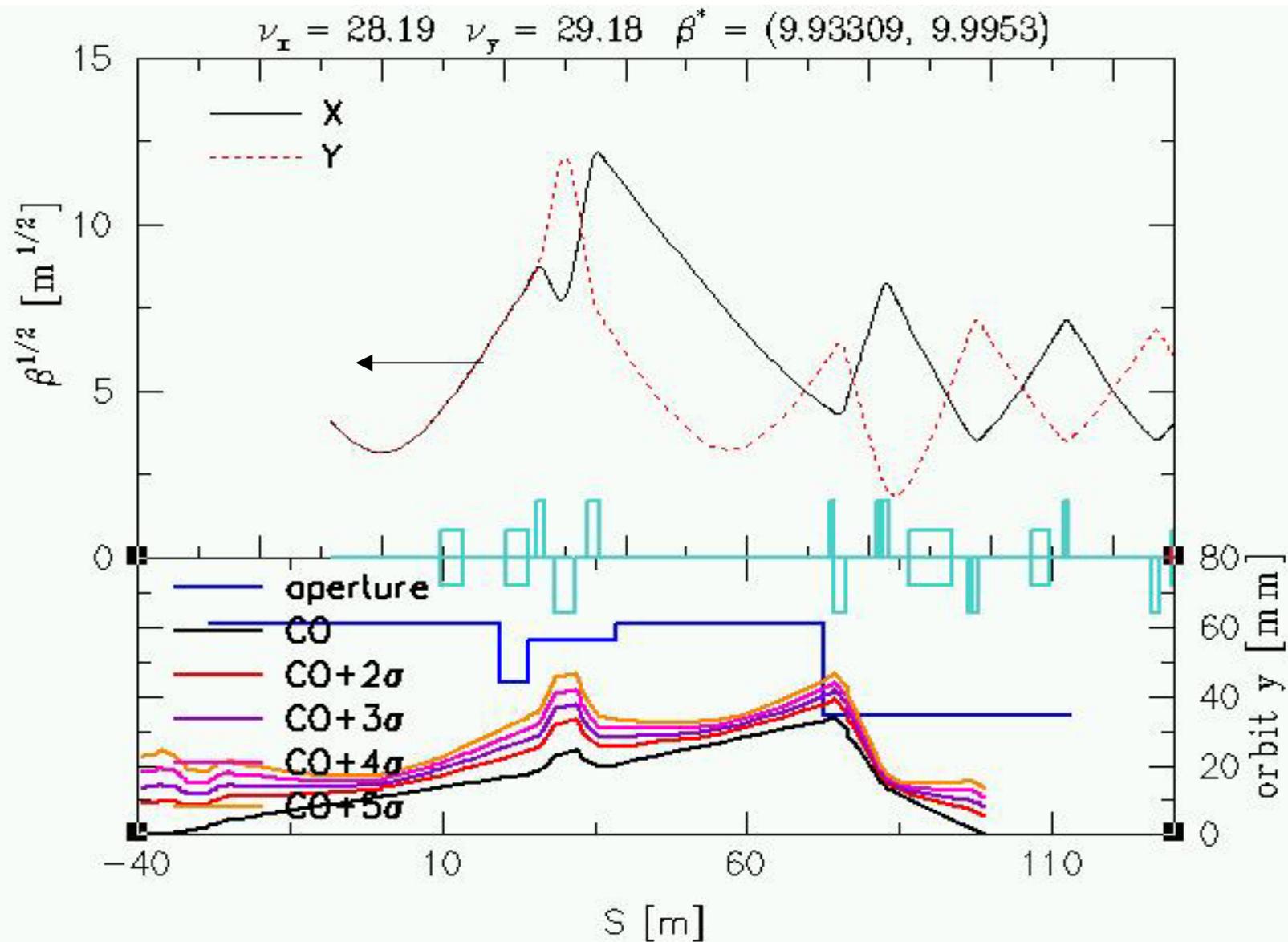
RHIC Electron Detector Solenoid & NEG Pipe Locations
23 September 2003

Numbers designate power supply

- NEG Pipe
- Electron Detector
- Solenoid
- Fast CCG
- IP/TSP/CCG
- Pin Diode

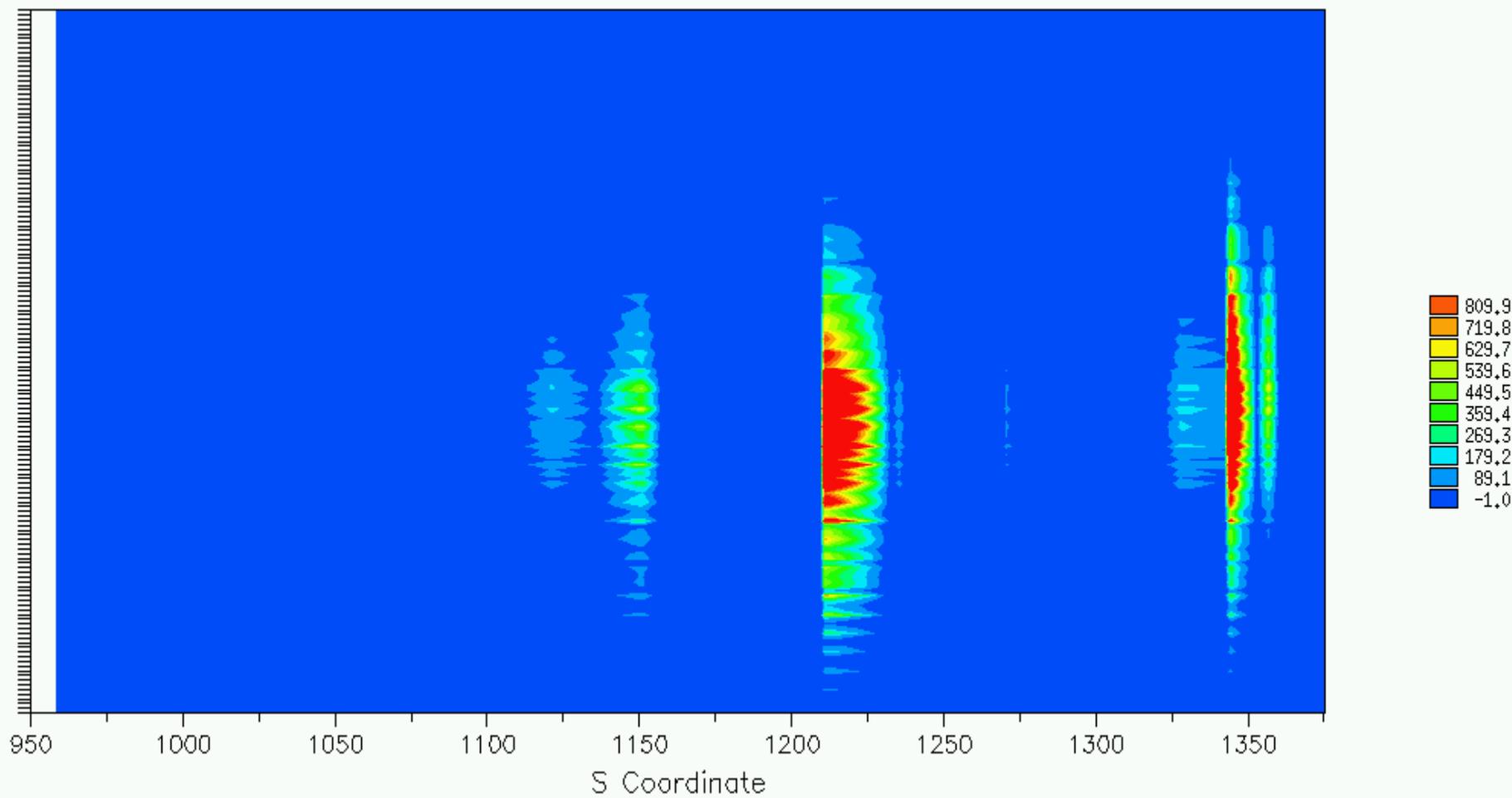
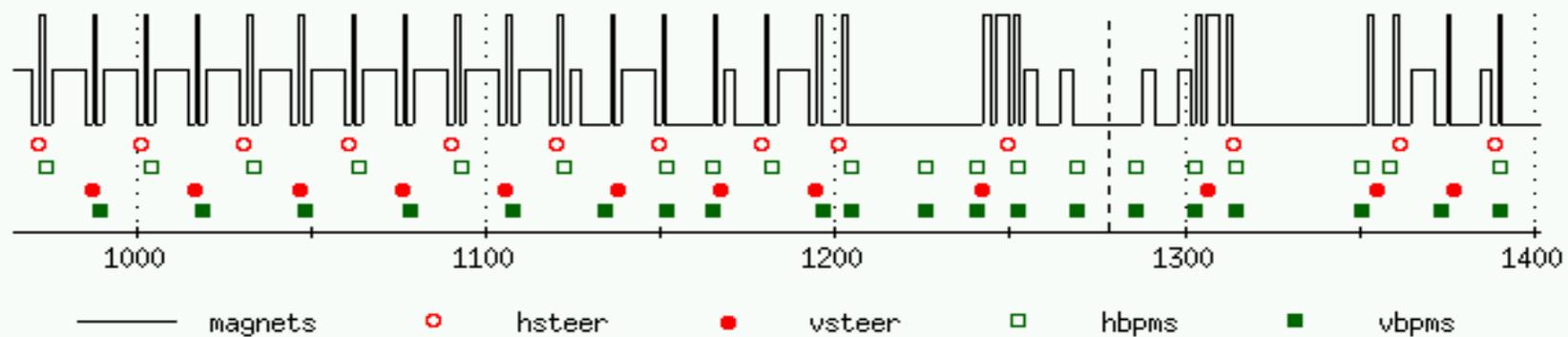


Bump Used in the Study

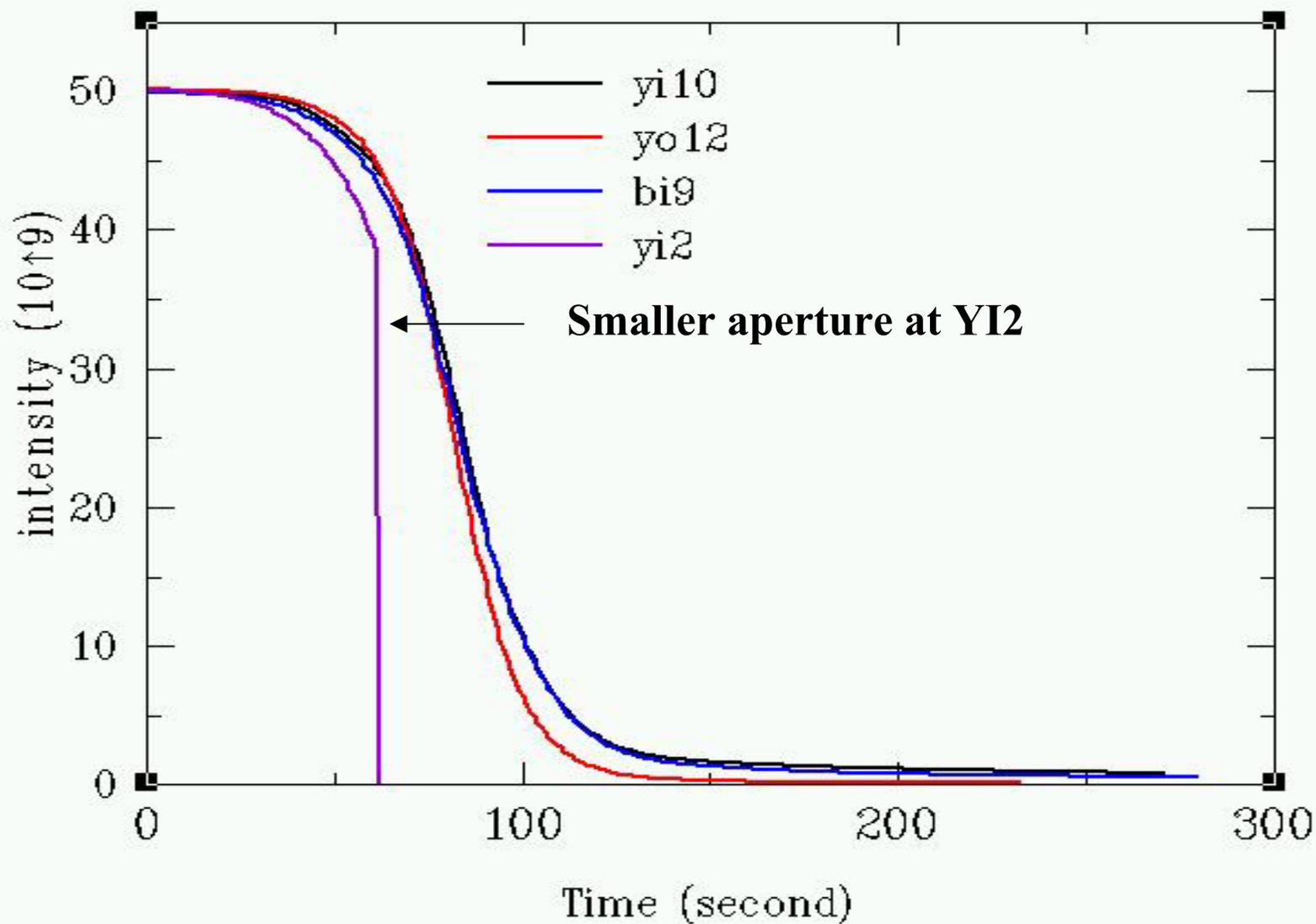


eam <== Lattice: Yellow

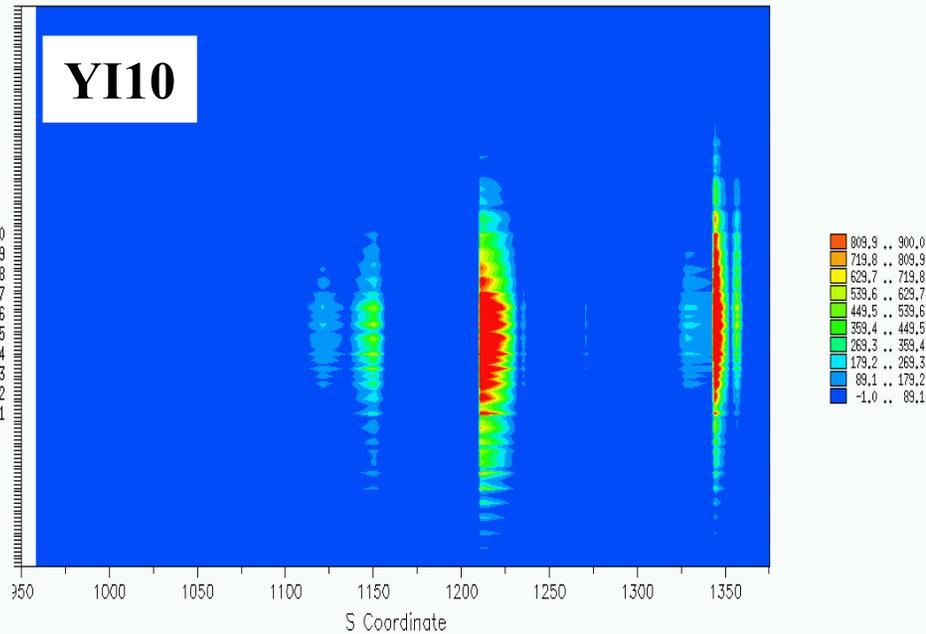
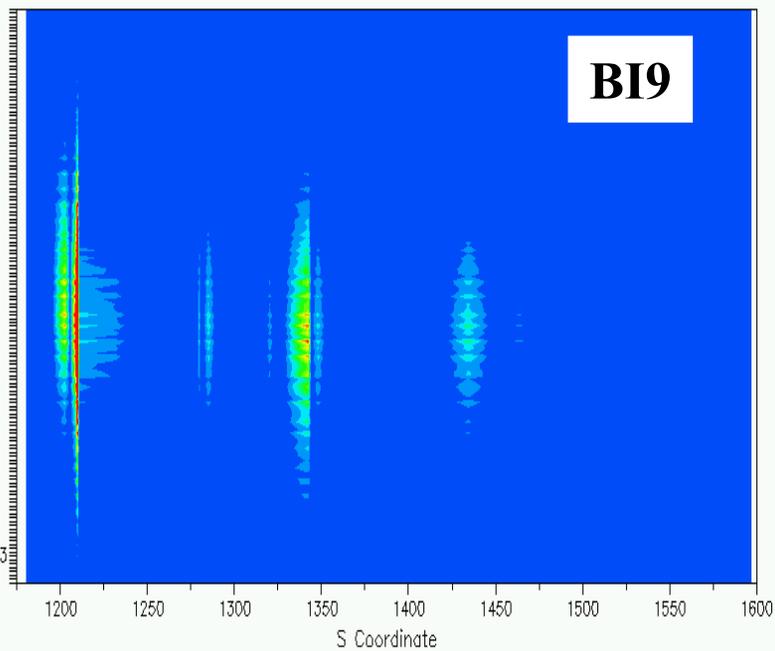
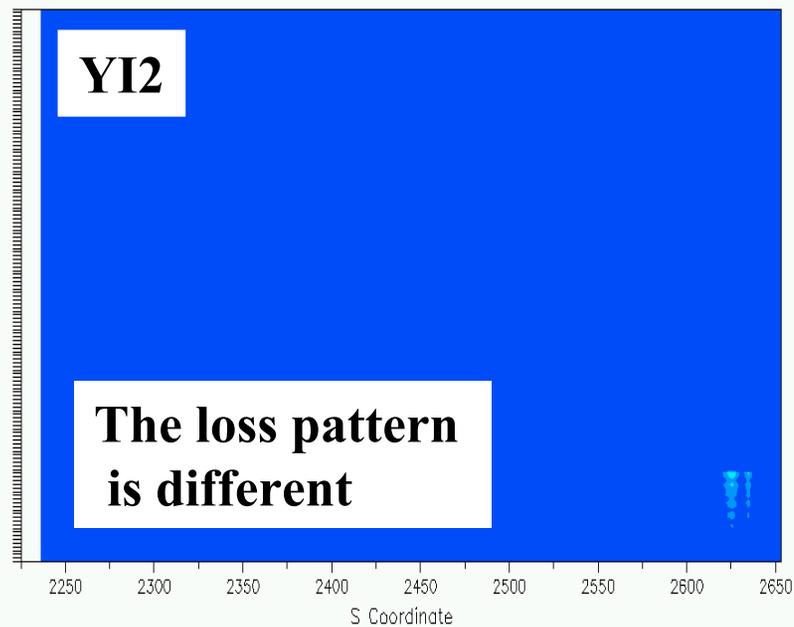
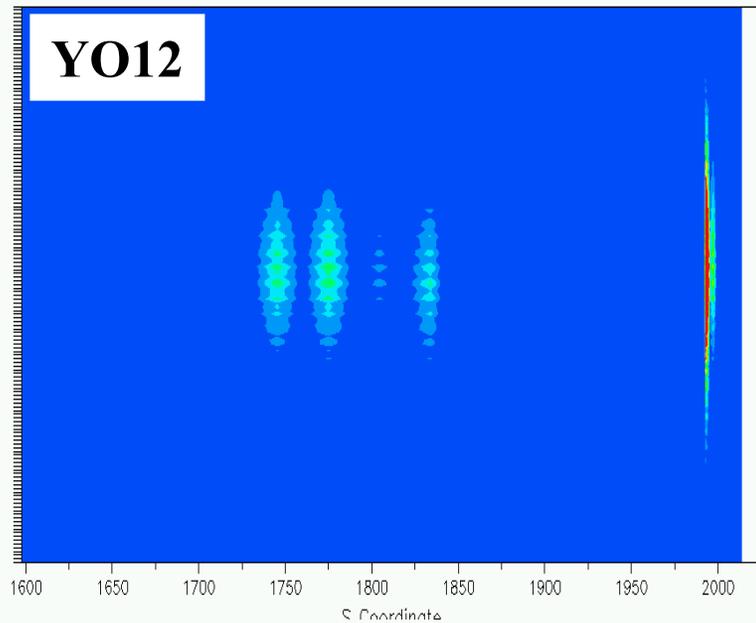
Ring

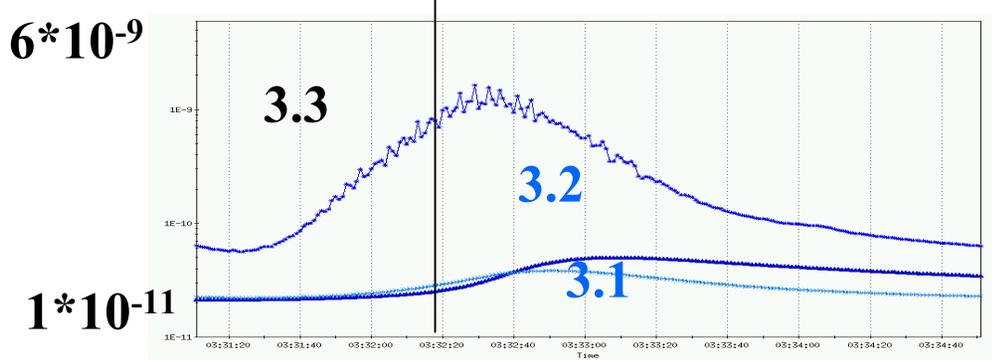
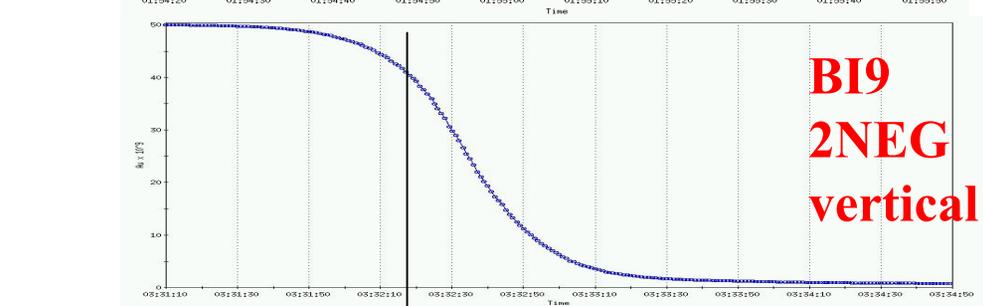
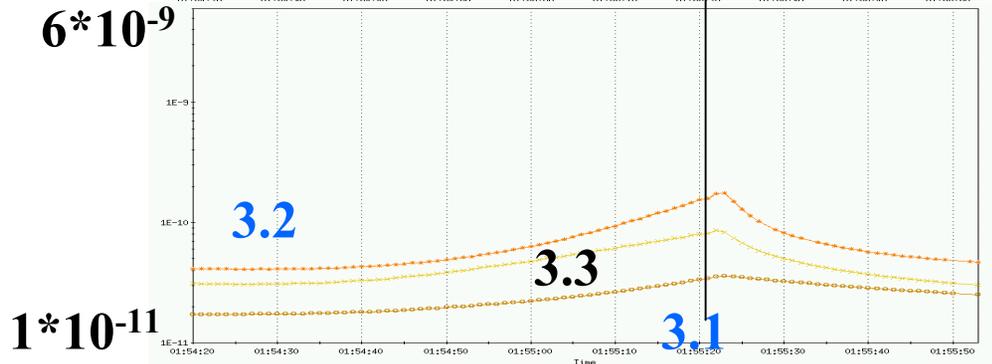
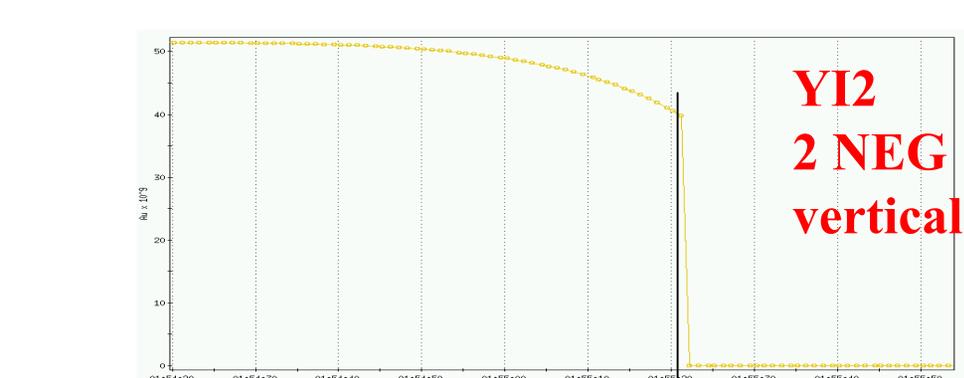
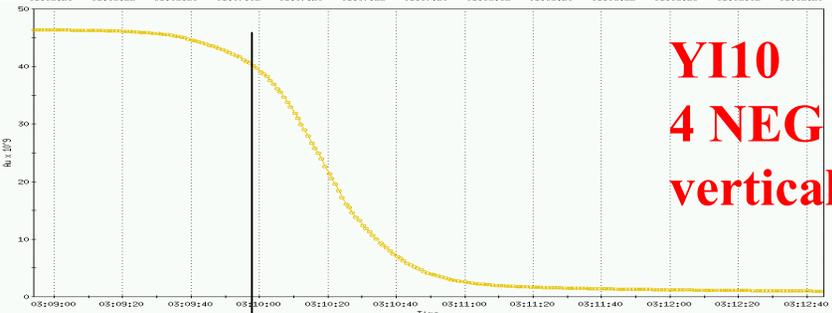
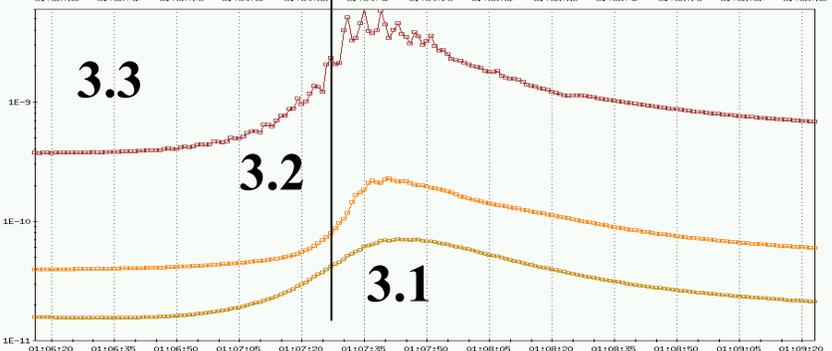
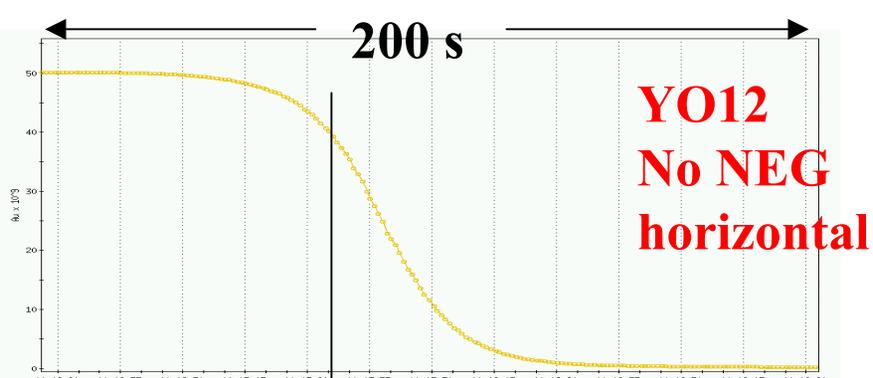


How Similar Were the Bumps?



← 400 m →





Observations and Plan

- All vacuum gauges near NEG pipes show lower pressure rises.
- Pressure rise in unit of 10^{-11} at 3.2: yo12 (16) > bi9 (3) > yi10 (0.1?)
- Pressure rise in unit of 10^{-11} at 3.1: yo12 (4) > bi9 (2) ~ yi10 (2)
- No pressure rise at 3.2 of yi10 (4 NEG pipes).
- All gauges at yo12 peaked same time, while 3.2 and 3.1 at yi10 and bi9 peaked ~30 seconds later than 3.3 (beam loss moved down stream while ramp the bump amplitude?).
- Bi9 and yi10 loss pattern were similar and the results are more comparable.
- Pressure rises faster at beginning of the beam loss.
- Why YI10 3.1 rises but 3.2 not?
- Q4 at YI2 quenched due to smaller aperture (many instrumentations there).
- RGA data could not be logged (radiation damage) for part of the study.
- Would like to continue on at Bo11, Bo2, Yo1 and Yi2.

