1. Triplet-Monitor Sig/Thres Scaling with Luminosity in IPs 1 and 5
2. Post-YETS UFO Strategy

B. Auchmann, 28th BLMTWG Meeting, December 1st 2015.

IT Thresholds

- We set thresholds for the Q2B scenario (loss peak roughly in center of Q2b) and orbit-bump scenario (Q1/3).

- We applied flat-top corrections to stay out of warning level during luminosity production

  - at $1e34$ $cm^{-2}s^{-1}$ for MF = 0.1667,

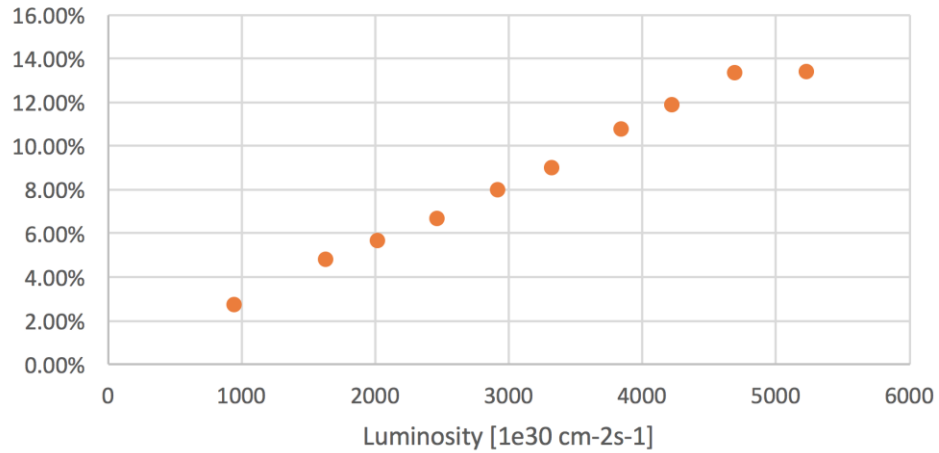 - and therefore at $2e34$ $cm^{-2}s^{-1}$ for MF = 0.333.

Extrapolation from Meas. Data

- Verification with Chen's Sig/Thres tool confirms this setting with ~5% margin.

- The Sig/Thres data of the family with highest Sig/Thres is displayed below for IP1 and 5, respectively.

IP1, THRI.IP15.P3_MQXA_FT
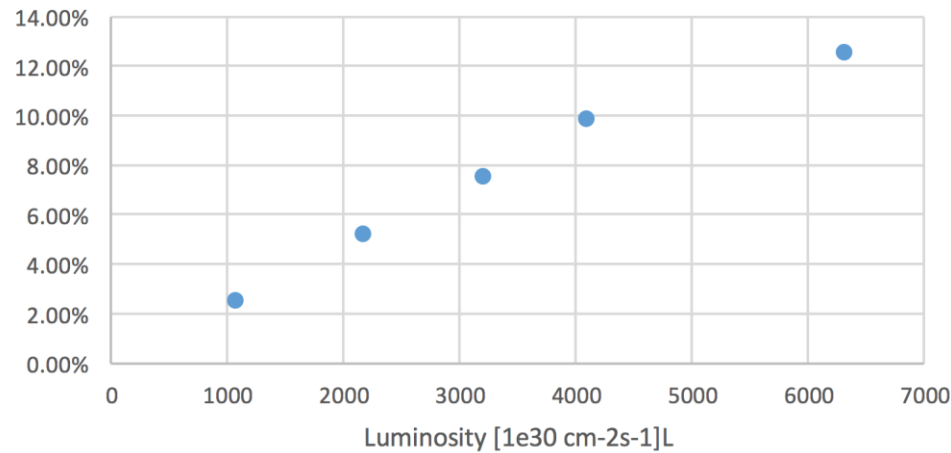
IP5, THRI.IP15.P22_MQXB_FT

IT Post-YETS Strategy

- For projected peak luminosity of $1.6e34$ cm^{-2}s^{-1} in 2016, a MF of at least 0.27 is required.

- Check with MP3 if MF increase to 0.3 can be recommended.

- Otherwise, increase FT corrections by x2 and stay with MF = 0.1667.

- For IP8:
  - FT (FixToRS 9) correction for THRI.IP28.P3_MQXB (see http://indico.cern.ch/e/blmtwg26).
  - Repeat IP15 exercise for IP8.

2015 Experience with UFOs

Recall that

- to avoid the 3 UFO-induced quenches in 2015 we would have caused >20 additional unnecessary dumps.

- out of 10 dumps without quench, 9-10 were unnecessary (did not prevent a quench).

- mid-October we increased the ARC monitor factors (MF) from 0.333 to 0.499.

- in the remaining 2 weeks we saw 1 dump avoided by the MF increase and still 1 unnecessary dump.

- MF increases should be temporary.

Data at http://cern.ch/blmtwg > Run 2 UFO Events

Post-YETS UFO Strategy

- To improve overall availability and keep the risk of protection-heater damage to a minimum, we propose to:
  - increase the RS 1-6 Master Thresholds (MT) by x5 (additional AdHoc correction)
  - reduce the MF to 0.2
  - (This means an effective further increase by x2 in short-RS thresholds.)
  - (P3 MQ monitor MTs are unchanged, MF to 0.2.)
  - keep this setting (or even increase MF), provided we see **no more than ~20 UFO-induced quenches per year**.

UFO Strategy Summary

- If before Run 2 we were prepared to optimize availability by avoiding UFO-induced quenches through the BLM system …

- … we now aim to avoid BLM interference with UFOs, since their principal effect is a reduction of availability through unnecessary dumps.

- We will study with Christos the possibility to adapt the BLM threshold algorithm (FPGA) on the long term (new RS at 160 µs? Trigger including ratio of RSs?).

- In the meantime we appear to be lucky enough to be able to operate without *major* impact of UFOs on availability or machine protection.