

Proposal for Abort Gap Monitor

1. measurement time: gap (3 us integration of intensity)
only 6 bunches will reach the aperture between 5 and 10 sigma if all nominal bunch positions in the gap would be filled
2. operating energy: 0.45 to 7 TeV
3. trigger for gap monitor: derived from dump kicker trigger
usage of same trigger source to increase reliability
4. lowest intensity to be detected: limit is derived from the intensity limit of the collimation/absorption system
In the case that all abort kickers make a asynchronous beam dump the intensity is $6 \cdot 10^{11}$ protons in 150 ns on the collimators. Such event should be very exceptional therefore I assume a 10 times lower intensity in the abort gap which should be dumped. The sensitivity of the instrument should be then a factor 100 below the $6 \cdot 10^{11}$. (Bernard: also the absorption devices (TCDQ, TCDS) limits have to be taken into account (TCDQ: quench limit 0.5 mJ/g, 20 us loss: 1-10 J/g).

Proposal for Abort Gap Monitor (2)

5. highest intensity to be detected: $120 * 1.7 \text{ E}11$
filling of all nominal bunch position with ultimate intensity
6. update time of measurements: $t = 1 \text{ ms}$
will depend on the gap filling possibilities (wrong injection, RF failures)
7. accuracy of measurements: $dI/I = 0.1$
8. reliability, MTBF: 20 years
9. availability during the fills: 100%