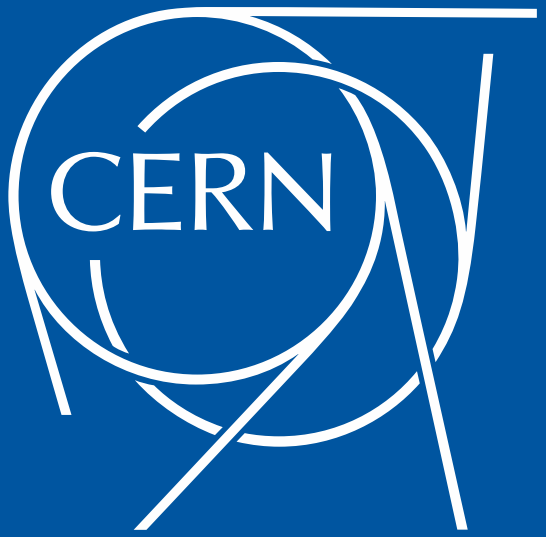
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rMPP: MD#1182, Calibration of IP6 dBLMs

- **Motivation:**
  - In case of an asynchronous beam dump with a full machine it is predicted that all IC BLM and other instruments will be saturated.
  - It is necessary to assess the number of nominal bunches having impacted the TCDQ before resuming operations or intervention (designed to resist instant losses in the order of 36 bunches)
- **Merit:**
  - **Calibrate dBLM response** to number of particles impacting on TCDQ.
  - Ensure that **dBLM signal is not saturated** during an asynchronous beam dump with full machine for accurate damage assessment.
- **Readiness:**
  - dBLM **FESA class** is up and running since April.
  - A first calibration was done during asynchronous BD tests in May and June.
  - Since saturation was observed, thinner, less efficient diamonds and attenuators were installed to bring signals below 10V and protect the readout systems.
  - MD procedure finalized.

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- **The MD would have two parts:**
  - **First part: top energy calibration of signal/p+: 2h(+2h)**
    1. Inject pilots then a nominal in B1 and B2
    2. Scrape the beam with the TCDQ using a growing closed orbit bump

       No risk of quenching since the losses would happen over 2-3s
    3. Do the same for B2.
  - **Second part: injection energy test for saturation: 1h(+1h)**
    1. Move the TCDQ collimator to flap top position (4.51mm)
    2. Inject & dump a probe with an open orbit bump of 10 µrad on the TCDQ
    3. Scan the open bump amplitude up to 70 µrad with a step of 5 µrad
    4. Inject a nominal on the TCDQ with the bump amplitude yelding the highest signal

       Slight risk of quenching the Q4 magnet
    5. Do the same for B2.

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- **Relevant Machine Protection aspects:**
  - **First part: top energy calibration of signal/p+: 2h(+2h)**
  - Masking of the BPMS interlock in IR6
  - **Second part: injection energy test for saturation: 1h(+1h)**
  - Change of the TCDQ collimator from injection to flat top position (4.51mm)
  - SBF to beam setup
  - Injection into empty machine interlock in the SPS has to be raised from 6E10 to 1.1E11 p+
  - Possibility of quenching the Q4 magnet

    => MD slot at the end of the block before TS

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