Collimator MDs #1

Some results from the Base-Band Q (BBQ) Measurement

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![Graph showing temperature and frequency data.](image-url)

- t [s] on the y-axis, ranging from 0 to 140
- f [kHz] on the x-axis, ranging from 5.55 to 5.57

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![Graph showing time-frequency analysis](image)
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A recent development, started beginning of this year
Far from being finished
Goal: as sensitive method as possible to see betatron oscillations in LHC to limit the emittance blow-up

The diode detectors, installed directly on PU electrodes, convert beam signal spikes into a saw waveform, with teeth having betatron frequency modulation, biased by a DC voltage related to spike amplitudes (revolution frequency energy)
The storage RC network is connected to the amplifiers by a capacitor to cut out the DC voltage.
The detectors from opposite PU electrodes are connected to a differential input amplifier, to subtract detector voltages and remove an offset related to the beam average position.
The filter attenuates the revolution frequency and its harmonics, as well as very low frequencies. The revolution frequency is attenuated some 100dB in respect to the betatron band.
Spare slide: How it works: the frequency domain

![Diagram showing frequency domain analysis](image)

- a GHz
- \((\ldots)\)
LHC beam: 72 bunches, \( \sim 5 \times 10^{10} \) ppb, 26GeV, Damper OFF

The beam signal from the 3D-BBQ

The excitation signal sent to the kicker pick-up
Spare slide: Fixed targed results

http://www.cern.ch/gasior/pro/3D-BBBQ/3D-BBBQ.html