



LHC Injectors Upgrade

Progress with PS e-cloud detectors

H.Neuper, M.Taborelli, C.Yin-Vallgren

Thanks to B.Salvant, S.Gilardoni, E.Piselli, A.Romano, J.Ferreira Somoza

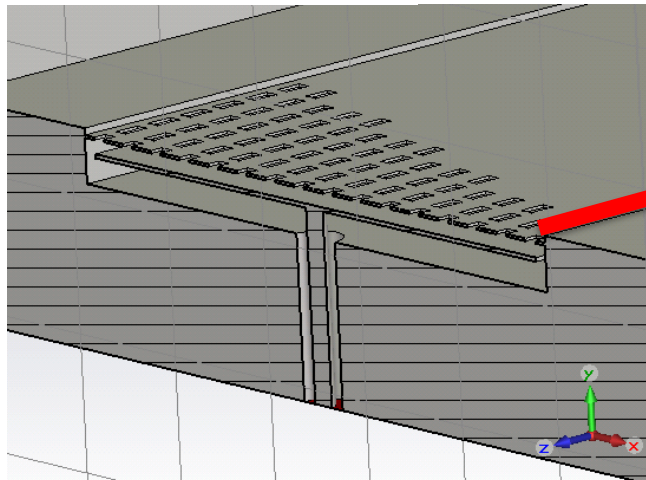


pick up MU98:

The e-cloud signal was blurred by the beam: check the screening effectiveness



Contacts
to the
vacuum
chamber



Impedance calculation by Benoit Salvant:

Needs better shielding

Calculate the “transparency” (signal power) of the present system with 1m bunch length (3ns) and 1nC charge:

- No grid : **0.003 W**
- Grid with 1x1 mm holes and 1 mm distance electrode-grid : **1^e-8 W** (=noise on the simulation)
- Grid disconnected on one side : **$1e-5$ W** ($1.5e-5$ W for 0,5 mm distance)

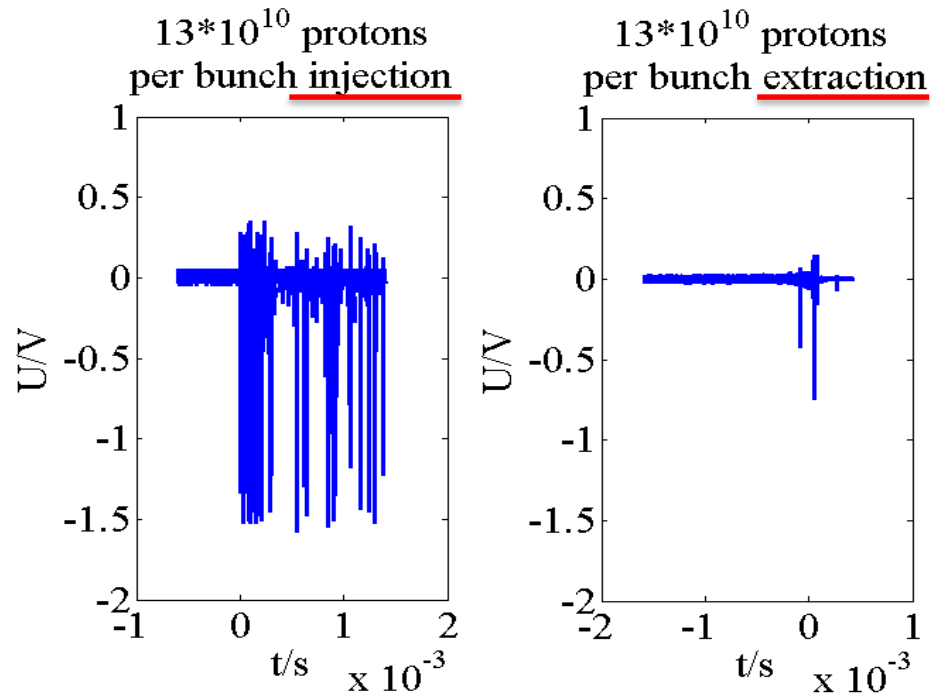
The front contact of the grid is relevant!

Must be modified, but venting is necessary



Photon detector:

The signal showed large peaks close to extraction and even after extraction. We verified the relation with proton losses by comparing the signal at injection and extraction...**with the detector closed** (black foam)



In spite of the masking the same signal is detected.

There is more signal at injection, confirming the relation with proton losses.

Lead shielding is necessary (about 10 mm, as for the wire scanner PMT in the PS which are at similar distance from the beam): in progress



Further items:

- do a second «cleaning» kick to prove that the signal after extraction is still due to proton losses (MD)
- test detector in the lab (sensitivity to current in an electron gun): not obvious, since in the lab we have a lot of photons from the gun filament and we cannot filter them out easily
- mounting the viewport on SD98 is still an option, but less urgent (needs venting)