

MPP meeting 20 March 2009

Agenda:

- LBDS tracking studies to analyse the consequences of asynchronous beam dump events (T. Kramer)
- Status of BLM threshold trimming (V. Kain et al).

Present:

Nicola Bacchetta (CMS), Walter Venturini, Bernd Dehning, Reyes Alemany, Daniela Macina, Siegfried Wenig (Atlas), Robert Appleby, Barbara Holzer, Mariusz Sapinski, Alick Macpherson, Richard Hall-Wilton (CMS), Jan Uythoven, Verena Kain, Bruno Puccio, Juan Blanco, Benjamin Todd, Laurette Ponce, Stephen Jackson, Chris Zamantzas, Ralph Assmann, Mirko Pojer, Brennan Goddard, Rudiger Schmidt, Stefano Redaelli, Thomas Kramer, Jorg Wenninger, Mike Koratzinos

Minutes:

Consequences of asynchronous dumps (T. Kramer):

Thomas presented his thesis work on the consequences of asynchronous beam dump events. He encourages input to what he presented. He has run simulations using MADX and the thintrack module. Post-processing is done using Matlab. He only treats direct proton hits. He starts with a Gaussian beam in Q5 and tracks for 10 turns. He applies random errors to quads, MB, BPM errors and uses Micado for orbit correction. Brennan: caution is needed for the aperture model, as it is not complete. R. Assmann pointed out that the beta beating should be larger than what was presented.

The treatment of skew elements is tricky because thintrack does not support tilted apertures. R. Assmann pointed out that Sixtrack does not have this problem. But R. Schmidt mentioned that MADX must be used because of the time dependent failures that are not implemented in Sixtrack. R. Assmann thinks that the time dependent failures now could be implemented in Sixtrack if it is officially requested. Thomas simulates 20000 particles. This means that his simulations are not sensitive to losses smaller than 10^8 (however, 10^6 losses are enough to quench a magnet).

Thomas showed a table of 28 possible failures out of which he has looked into 10. He has looked into beam 1. A good outcome of the simulations is that only collimators or absorbers are hit for the realistic cases. There was unanimous agreement of all present that beam 2 studies would be very interesting and should be performed with the highest priority. Timescale for this work is 2 months.

D. Macina asked if one should repeat the simulations at 5TeV. B. Goddard answered that this should indeed be done.

There is some real data of beam loss pattern during beam dumps from September last year. Stefano has looked at these data, consistent with simulation studies. It was noted that BLM data was difficult to mine out.

Management of critical settings and BLM trim (V. Kain):

Verena presented some technical aspects of the MCS (Management of critical settings). These are LSA settings with a digital signature that can be changed through a “trim client”. RBAC provides the digital key storage. Anybody can load settings, but only authorized experts can change settings. At regular intervals a comparison between what is in the DB with what is in the hardware must be performed. This will be done by the sequencer and/or by SIS (depends on the system). Checks are performed after each RBAC or LSA release. All critical settings have to go through a set of predefined checks.

BLM critical settings were tested on 3rd and 9th March. Trimming works very well, but trim history has a bug. Db online check and configuration file check were successful. Full online check failed. S. Jackson wondered if a timeout facility be introduced for the BLM tests. Settings generation (performed whenever the master table is changed) worked. Overall things are looking good with a few details to iron out.

Various questions were raised during the talk. R. Assmann asked how long it takes to load all BLM thresholds, to which V. Kain answered that it took 5 Minutes. Other questions: Can we switch the system off? Who defines if a setting is critical/not critical? A more formal procedure will be needed. B. Goddard pointed out that a way to track the history of changes is also needed.