Fall-back solutions in case of high background

Major concern of the Muon Trigger is high background rate.

In all previous experiments running at hadron beams the rates turned out to be much higher than expected.

I believe that in CMS we have done much more work to calculate the backgrounds, but anyway, we have to be ready for surprises.

There are many handles in the Muon Trigger system to suppress the background for an expense of efficiency. **See next page for examples.**

We have to make sure that the actual hardware design enables to use such possibilities and we need to understand what efficiency loss they cause.

I propose to the groups to make presentations on the subject at April'98 TriDAS review.

Fall-back solutions in case of high background

CSC

- require 5 out of 6 instead of 4 out of 6 planes in coincidence
- b.x. tagging by the third, rather than the second hit
- reduce the number of accepted patterns

Drift Tubes

- accept “high triggers” only
- require coincidence with eta-view
- require correlation of two superlayers

Track Finder

- require at least 3 stations
- narrow the cones for track segment matching

RPC PACT

- reduce the number of accepted patterns
- narrow the gates (e.g. from 20 ns to 15 ns)
- require a hit in the reference plane
- accept only 4 out of 4 planes in coincidence

Global Muon Trigger

- require a muon to be seen by both systems

System "upgradeability"

It would be useful to prepare a table with limitations of the Trigger System, like the maximum number of primitives which could be send from one processing element to another, etc.

We need to keep in mind this kind of limitations in order to make the design correctly.

Knowing the limitations, we need to envisage possible upgrades.

For example,
can we easily increase the number of optical links in each system?

It would be highly desirable to design boards in such a way that if want to make the upgrade, we just plug additional transmitters and receivers in the existing boards. Is it feasible?

Another example.
Can we increase a number of considered track candidates by increasing the processing power, e.g. adding more Track Finder modules?

I propose to discuss those issues at April'98 TriDAS review.