After VLCW06

Dear MDI panel (from H.Yamamoto, 26 July 2006);

At Vancouver (and earlier also) several important issues have come up that need to be discussed. They are

1. CMS-style detector assembly
   a. does it really save ~2years?
   b. impact on detector design
   c. impact on the experimental hall
   d. underground assembly (e.g. right on to the beamline?)
2. 14mrad+ 14mrad BDS change control
   a. Can we really forget 2mrad ?
      (of course it would still be alive as alternative, but still...)
      - stau search (conflicting studies?)
      - background
   b. Then, the push-pull option with one IR should be seriously considered?
   c. One long experimental hall containing two IRs. Design?
   d. Is the emittance growth really negligible when full anti-DID is used?
3. muon wall and TPC tolerances
   Is one 5m spoiler enough?

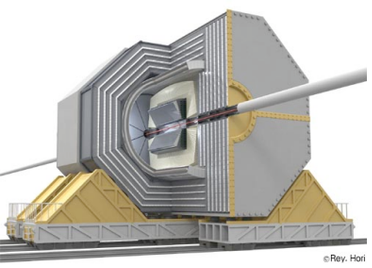
Dear All (from T.Tauchi, 27 July 2006) ;
I would like to comment on the BDS change control (CC);
> 2. 14mrad+ 14mrad BDS change control
I understand that this CC is necessary for the cost estimation in RDR, which must be completed by end of this year, since the 2mr design is premature for reliable and realistic cost estimation in this timeline despite hard works of the BDS system group.
I think that small (<2mr) and large(>14mr) angle schemes are complimentary in a sense of SUSY-CDM and precise tracking in very uniform B field in a case of 2IR, while the 14mr x 14mr duplicate 2IR. Therefore, we should encourage to continue studies on the 2mr scheme including optimization of 2mr extraction line.

> a. Can we really forget 2mrad ?
So, apparently, the answer is No.
Instead, we should ask the WWS for announcement of such encouragement and the 2mr studies to be included in the DCR.
In the MDI panel, we may make action plan to address the above issues for the CDR as;
(1) detailed investigation of SUSY-CDM with 14mr crossing/anti-DID as well as the 2mr case
(2) tracking performance in the 14mr with anti-DID
(3) optimization of the 2mr extraction line and magnets, where we expect contributions from our detector community.

Summary

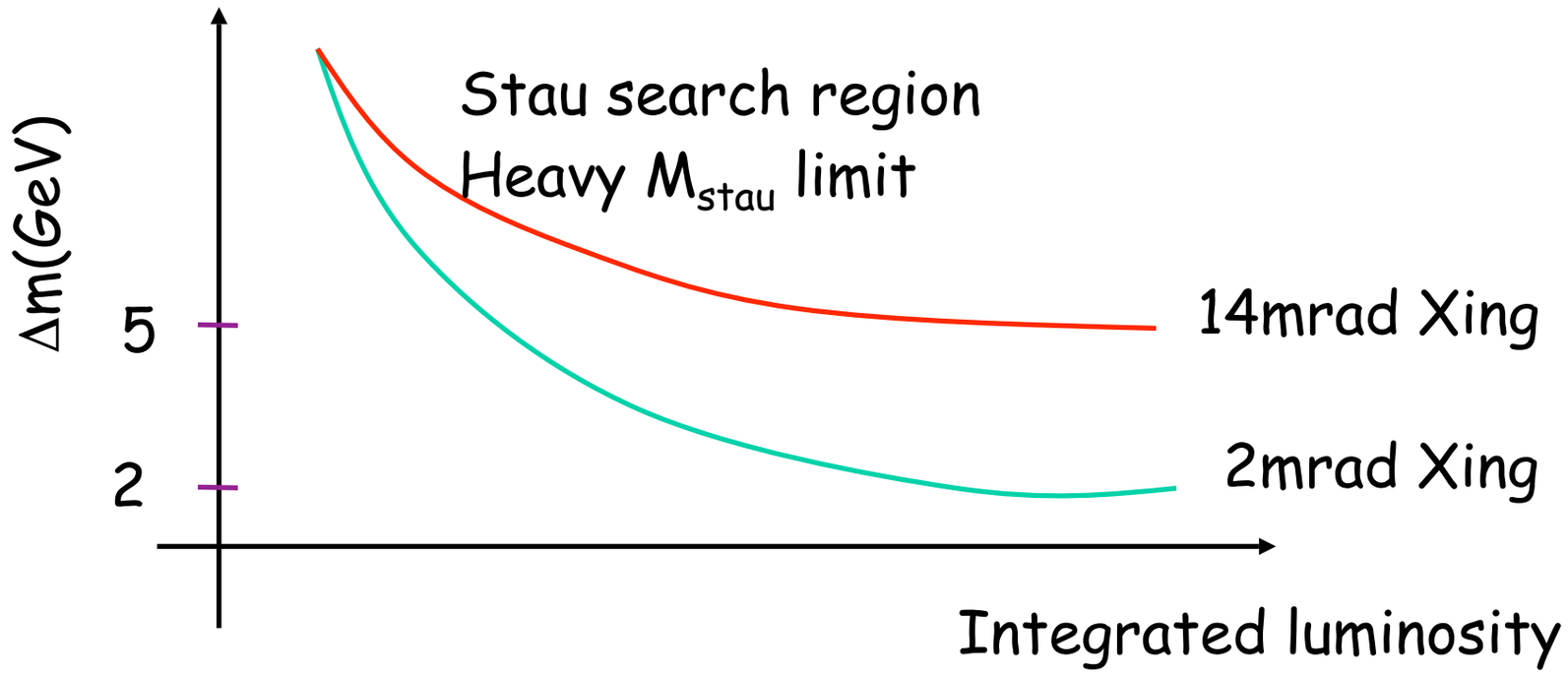
SUSY CDM : a case of ΔM=5GeV (D-point)

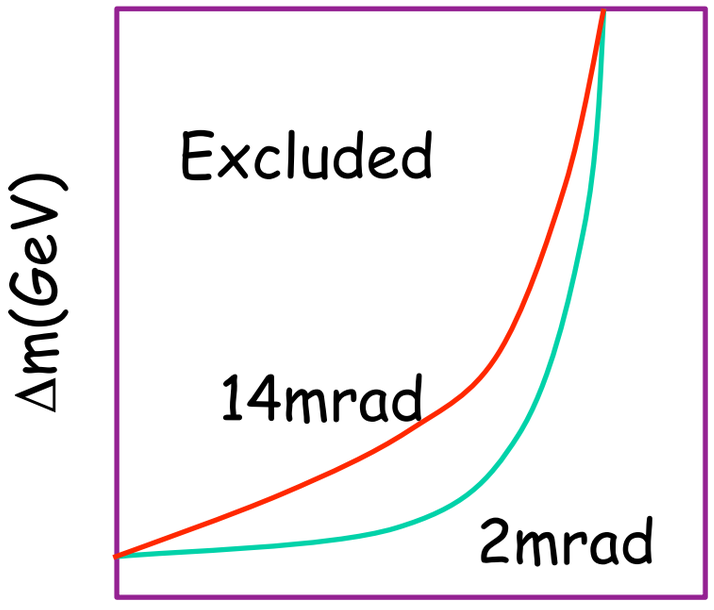
- If electron veto efficiency with 20mr/anti-DID is the same as the headon/2mr, equivalent luminosity (L) reduciton with 20mr would be 30% (40% with Bhabha induced veto) with relative to the headon/2mr.
- What function of ΔM is the L-reduction ?
- The above result is at generator level, i.e. without detector effects. What are the detector effects ?



Preliminary Conclusion

- Preliminary conclusion by a wild guess from a low stat. data
  - For Pt > 5GeV, Loss of efficiency of about 50% by putting cut on azimuthal angle.
  - The region below 5 GeV : will be hard to remove two-photon $ee\tau\tau$ events





- Plan
  - Simulation of 1M events are in progress
  - Hope result be ready by next week

Tolerances in Detectors

Table 1: Tolerances for background in VTX, TPC and CAL.

Sources : pairs disrupted beams/pairs beam halo

Detector	Hits	Neutrons	Muons
VTX	1×10^4 hits/cm^2/train	1×10^{10} n/cm^2/year	-
TPC	4.92×10^5 hits/50μsec	4×10^4 n*/50μsec	$1.2 \times 10^3 \mu$/50μsec
CAL	1×10^{-4} hits/cm^3/100nsec	-	0.03 μ/m^2/100nsec

→ 1μ/30m^2/bunch

* : The neutron conversion efficiency is assumed to be 100% in the TPC.

1 hit in TPC consists of 5 pads(1mmx6mm) x 5 buckets(50nsec)
A muon creates 1 pad x 2000 buckets in parallel to the beam line.
A neutron creates 10 hits in TPC.

Note : 0.005μ/bunch by two "tunnel fillers"

→ 0.8μ/150bunches

The 9 and 15m long spoilers at 660 and 350m from IP reduces muons by 10^{-4}