

*LHC Machine Protection Workshop
March 11th-13th, 2013
Hotel Les Trésoms, Annecy, France*

Summary of Session 4: Collimators and Movable Devices

V. Chetvertkova and S. Redaelli





Agenda



- ☑ LHC Moveable Devices
(S. Redaelli)
- ☑ Settings generation, management and verification
(G. Valentino)
- ☑ Beam-based validation of settings
(B. Salvachua)
- ☑ Updated robustness limits for collimator materials
(A. Bertarelli)
- ☑ Collimator hierarchy limits: assumptions and impact on machine protection and performance
(R. Bruce)



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dump and injection topics



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Many thanks to the speakers!

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3. Clearly, **verification of settings** remains a very **hot topic** for movable devices
 - *Isolated problems, but potentially very critical. Check, check, check (see also next talk)*
 - *Still some LSA weaknesses related to setting management, affected in particular injection*
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Enforcing improvement for the operation at 7 TeV (safety risk vs machine efficiency).
6. Questions arising:
 - *Check TCT losses during squeeze: scaling to 7 TeV and comparing to BCM thresholds for preparation of optics changes in stable beams*
 - *More responsibility to OP for validation of critical systems?*



Settings generation and management





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3. Very active discussion about **operational displays**. Definitely adequate for expert usage but could be improved for shift crew operation.
 - *Make them simpler (go / no-go)? Operation “easiness” versus diagnostics*
 - *Propose to change collimator display with a **mode-dependent** summary status*
 - *Proposed **action** to appoint someone in OP (or a mini-team) to provide feedback!*
 - *Will OP start using the ALARMS? Will never be improved if nobody uses it!*



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4. **Online model** and **aperture meter**. Useful or not?
 - *Certainly important for MDs, less clear for standard operation.*
 - *Clearly, should try to recuperate the useful component of existing tools*
 - *G. Roy following up the requirement -> dedicate discussion in a month or so (OP+ABP...)*
 - *Need someone to react quickly with ad hoc software implementation (Q', BB footprint...)*



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3. Online monitoring to speed up validation
 - *Always many ideas on understanding better regular losses. Hierarchy monitoring.*
 - *Regular monitoring already used, but might be improved and made systematically.*
 - *Can regular losses ever replace the “clean” dedicated losses?*
 - *Were we really limited by loss maps?*



Robustness limit of collimator materials





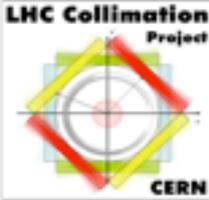
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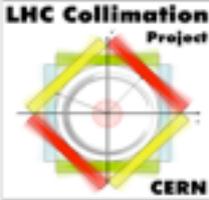
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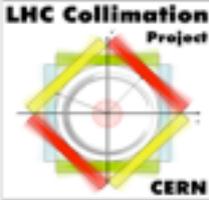
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7. In parallel, studies of high radiation doses (swelling) are ongoing (Kurchatov, BNL)



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5. Consider with high priority the possibility to build few collimators with new materials