



2024 BLM thresholds for 2.68TeV pp reference run

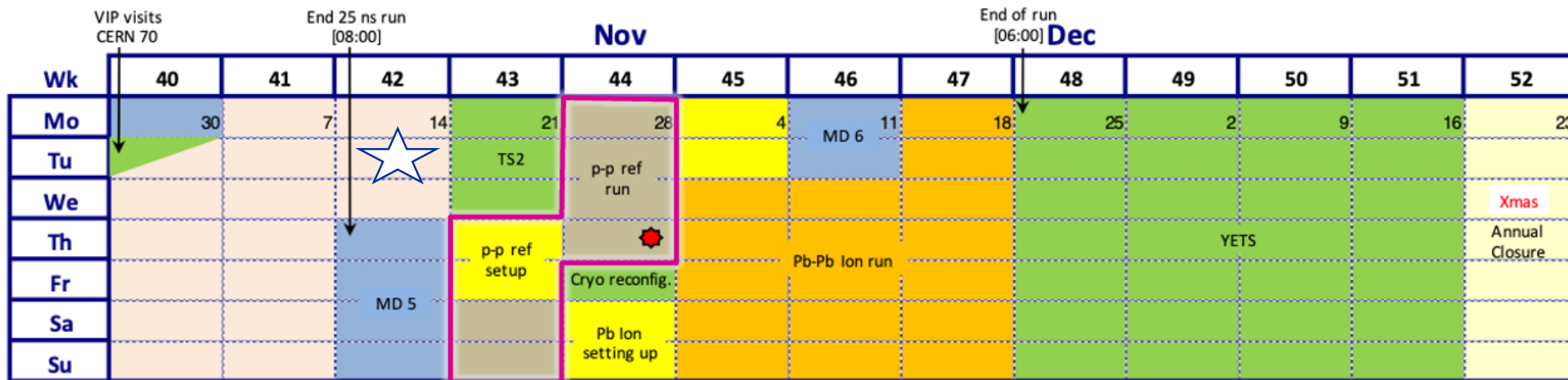
B.Salvachua, S.Morales, A.Lechner

With contributions from R.Alemany, M.Solfaroli, D.Mirarchi

2024 Schedule pp reference run

- 2 days of commissioning: 24-25 October
- 6 days of run: 25-31 October
- Combined ramp & squeeze to 3.1 m at 2.68 TeV

Beam Energy	2.68 TeV
Bunch Intensity	1.6e11 p/b
Nb bunches	2400 b
ATLAS Luminosity	1.6E+33 cm ⁻² s ⁻¹
CMS Luminosity	2-2.5E+33 cm ⁻² s ⁻¹
ALICE Luminosity	1.62E+31 cm ⁻² s ⁻¹
LHCb Luminosity	7.1E+32 cm ⁻² s ⁻¹



Luminosity losses

At 6.8 TeV the BLM monitoring the triplets include flat top corrections to account for luminosity debris.

In the past, as an approximation, we assumed linear scaling of losses with luminosity and energy. A. Lechner

https://indico.cern.ch/event/678515/contributions/2778851/attachments/1554045/2443093/2017_08_11_debris2p5TeVrun.pdf

$$f = \frac{\text{BLM}^{6.8\text{TeV}}}{\text{Threshold}^{2.68\text{TeV}}} \times \frac{2.68\text{TeV}}{6.8\text{TeV}} \times \frac{\mathcal{L}^{2.68\text{TeV}}}{\mathcal{L}^{6.8\text{TeV}}}$$

Factors needed to reach luminosity targets

Factors calculated to avoid 30% warning level in collisions

MonitorName	Dcum	MonitorFactor	Family	AppliedThreshold_Gys	MasterThreshold_Gys	RS	SignalTargetLumi_Gys	RatioToDumpPercent	Factor30	Experiment
BLMQI.01L8.B1E30_MQXA	23295.36	0.166	THRI.IP28.P3_MQXA_FT	0.000724	0.004364	RS12	0.001836	253.467316	8.448911	LHCB
BLMQI.01R8.B2E30_MQXA	23335.54	0.166	THRI.IP28.P3_MQXA_FT	0.000724	0.004364	RS12	0.001448	199.862128	6.662071	LHCB
BLMTI.04L8.B1E10_TCTPV.4L8.B1	23200.81	0.800	THRI_TCT	0.000750	0.000937	RS12	0.000546	72.774875	2.425829	LHCB
BLMTI.04R8.B2E10_TCTPV.4R8.B2	23429.80	1.000	THRI_TCTVB_OI_RC8	0.000737	0.000737	RS12	0.000433	58.797551	1.959918	LHCB
BLMQI.01R8.B1I10_MQXA	23338.74	0.166	THRI.IP28.P1_MQXA_FT	0.000986	0.005937	RS12	0.000440	44.690907	1.489697	LHCB
BLMQI.02L8.B2I30_MQXB	23268.76	0.166	THRI.IP28.P3_MQXB_FT	0.000124	0.000744	RS12	0.000034	27.826738	0.927558	LHCB
BLMQI.01L8.B2I10_MQXA	23291.87	0.166	THRI.IP28.P1_MQXA_FT	0.000986	0.005937	RS12	0.000266	27.019227	0.900641	LHCB
BLMQI.02R5.B1E30_MQXB	13376.13	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000080	64.555906	2.151864	CMS
BLMQI.02L5.B2E30_MQXB	13282.90	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000068	55.166044	1.838868	CMS
BLMQI.03R5.B1E30_MQXA_X5FCA.B4	13388.45	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000363	50.172642	1.672421	CMS
BLMQI.02R5.B2I30_MQXB	13358.90	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000040	32.112325	1.070411	CMS
BLMQI.02L5.B1I30_MQXB	13299.89	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000039	31.915823	1.063861	CMS
BLMQI.01L5.B1I30_MQXA	13307.97	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000220	30.310798	1.010360	CMS
BLMQI.01R5.B2I30_MQXA	13350.77	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000214	29.590698	0.986357	CMS
BLMQI.03R1.B1E30_MQXA	58.72	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000514	70.955310	2.365177	ATLAS
BLMQI.02R1.B1E30_MQXB	46.69	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000071	57.420962	1.914032	ATLAS
BLMQI.02L1.B2E30_MQXB	26612.35	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000060	48.320205	1.610673	ATLAS
BLMQI.02L1.B1I23_MQXB	26625.93	0.166	THRI.IP15.P23_MQXB_FT	0.000216	0.001302	RS12	0.000098	45.346178	1.511539	ATLAS
BLMQI.02L1.B1I30_MQXB	26629.03	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000045	36.373647	1.212455	ATLAS
BLMQI.02R1.B2I30_MQXB	29.75	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000044	35.640359	1.188012	ATLAS
BLMQI.03L1.B2E30_MQXA	26600.67	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000255	35.222025	1.174067	ATLAS

Beam Energy	2.68 TeV
Bunch Intensity	1.6e11 p/b
Nb bunches	2400 b
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CMS Luminosity	2-2.5E+33 cm ⁻² s ⁻¹
ALICE Luminosity	1.62E+31 cm ⁻² s ⁻¹
LHCb Luminosity	7.1E+32 cm ⁻² s ⁻¹

IP1 and IP5 triplet monitors need a factor 2.4

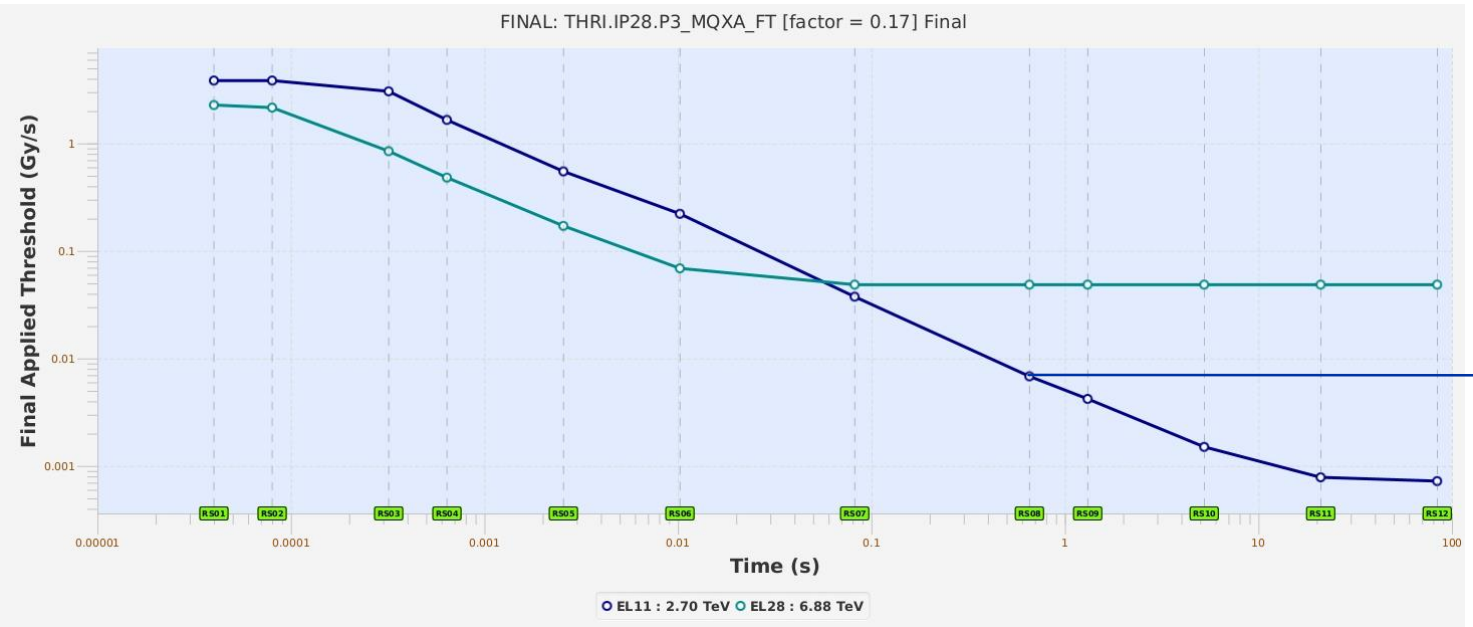
IP8 triplet monitors need a factor 8.5

IP8 TCTs monitors need a factor 2.4 and 1.95

No modifications for ALICE

IP8 triplet

MonitorName	Dcum	MonitorFactor	Family	AppliedThreshold_Gys	MasterThreshold_Gys	RS	SignalTargetLumi_Gys	RatioToDumpPercent	Factor30	Experiment
BLMQI.01L8.B1E30_MQXA	23295.36	0.166	THRI.IP28.P3_MQXA_FT	0.000724	0.004364	RS12	0.001836	253.467316	8.448911	LHCB
BLMQI.01R8.B2E30_MQXA	23335.54	0.166	THRI.IP28.P3_MQXA_FT	0.000724	0.004364	RS12	0.001448	199.862128	6.662071	LHCB
BLMTI.04L8.B1E10_TCTPV.4L8.B1	23200.81	0.800	THRI_TCT	0.000750	0.000937	RS12	0.000546	72.774875	2.425829	LHCB
BLMTI.04R8.B2E10_TCTPV.4R8.B2	23429.80	1.000	THRI_TCTVB_OI_RC8	0.000737	0.000737	RS12	0.000433	58.797551	1.959918	LHCB
BLMQI.01R8.B1I10_MQXA	23338.74	0.166	THRI.IP28.P1_MQXA_FT	0.000986	0.005937	RS12	0.000440	44.690907	1.489697	LHCB
BLMQI.02L8.B2I30_MQXB	23268.76	0.166	THRI.IP28.P3_MQXB_FT	0.000124	0.000744	RS12	0.000034	27.826738	0.927558	LHCB
BLMQI.01L8.B2I10_MQXA	23291.87	0.166	THRI.IP28.P1_MQXA_FT	0.000986	0.005937	RS12	0.000266	27.019227	0.900641	LHCB



Thresholds increase with MF is not sufficient

Master threshold change needed (see next slide)

New value for the pp-ref run

IP8 triplet

Correction needed:
AD_HOC_FIX_TO_RS_CORRECTION
Fix RS08-RS12 to RS08 for EL11 only

Master RS08 = 4.11×10^{-2} Gy/s
 New thresholds are still below the ones used at 6.8 TeV



Correction Panel

AD_HOC_FACTOR_CORRECTION

DECREASE_CORRECTION

AD_HOC_FACTOR_CORRECTION

AD_HOC_FIX_TO_RS_CORRECTION

AD_HOC_FIX_TO_RS_CORRECTION

MAX_BITS_CORRECTION

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<input type="checkbox"/> Beam_lvl 2	<input type="checkbox"/> Beam_lvl 18	ScaleRS 2	<input type="text" value="2.0"/>
<input type="checkbox"/> Beam_lvl 3	<input type="checkbox"/> Beam_lvl 19	ScaleRS 3	<input type="text" value="3.0"/>
<input type="checkbox"/> Beam_lvl 4	<input type="checkbox"/> Beam_lvl 20	ScaleRS 4	<input type="text" value="4.0"/>
<input type="checkbox"/> Beam_lvl 5	<input type="checkbox"/> Beam_lvl 21	ScaleRS 5	<input type="text" value="5.0"/>
<input type="checkbox"/> Beam_lvl 6	<input type="checkbox"/> Beam_lvl 22	ScaleRS 6	<input type="text" value="6.0"/>
<input type="checkbox"/> Beam_lvl 7	<input type="checkbox"/> Beam_lvl 23	ScaleRS 7	<input type="text" value="7.0"/>
<input type="checkbox"/> Beam_lvl 8	<input type="checkbox"/> Beam_lvl 24	ScaleRS 8	<input type="text" value="8.0"/>
<input type="checkbox"/> Beam_lvl 9	<input type="checkbox"/> Beam_lvl 25	ScaleRS 9	<input type="text" value="8.0"/>
<input type="checkbox"/> Beam_lvl 10	<input type="checkbox"/> Beam_lvl 26	ScaleRS 10	<input type="text" value="8.0"/>
<input checked="" type="checkbox"/> Beam_lvl 11	<input type="checkbox"/> Beam_lvl 27	ScaleRS 11	<input type="text" value="8.0"/>
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<input type="checkbox"/> Beam_lvl 13	<input type="checkbox"/> Beam_lvl 29		
<input type="checkbox"/> Beam_lvl 14	<input type="checkbox"/> Beam_lvl 30		
<input type="checkbox"/> Beam_lvl 15	<input type="checkbox"/> Beam_lvl 31		
<input type="checkbox"/> Beam_lvl 16	<input type="checkbox"/> Beam_lvl 32		

AD_HOC_FIX_TO_RS_CO... ▼

A... MOVE ... MOVE ...

Delete

COMMIT TO STAGE

Set all beam levels Unset all beam levels

Order ID 5 Finish Editing Cancel

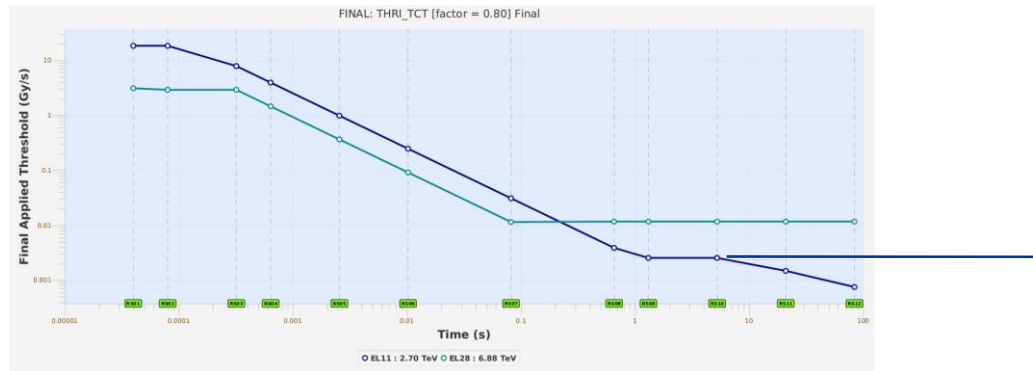
IP8 TCTs

MonitorName	Dcum	MonitorFactor	Family	AppliedThreshold_Gys	MasterThreshold_Gys	RS	SignalTargetLumi_Gys	RatioToDumpPercent	Factor30	Experiment
BLMQI.01L8.B1E30_MQXA	23295.36	0.166	THRI.IP28.P3_MQXA_FT	0.000724	0.004364	RS12	0.001836	253.467316	8.448911	LHCB
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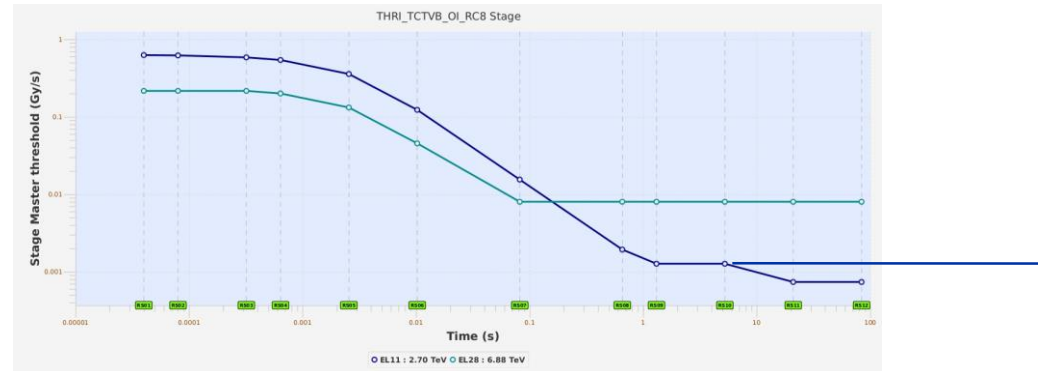
Thresholds increase with MF is not sufficient

Same Master Thresholds proposal
Fix to RS10 only in EL11

Master RS10 = $3.17e-3$ Gy/s



Master RS10 = $1.27e-3$ Gy/s

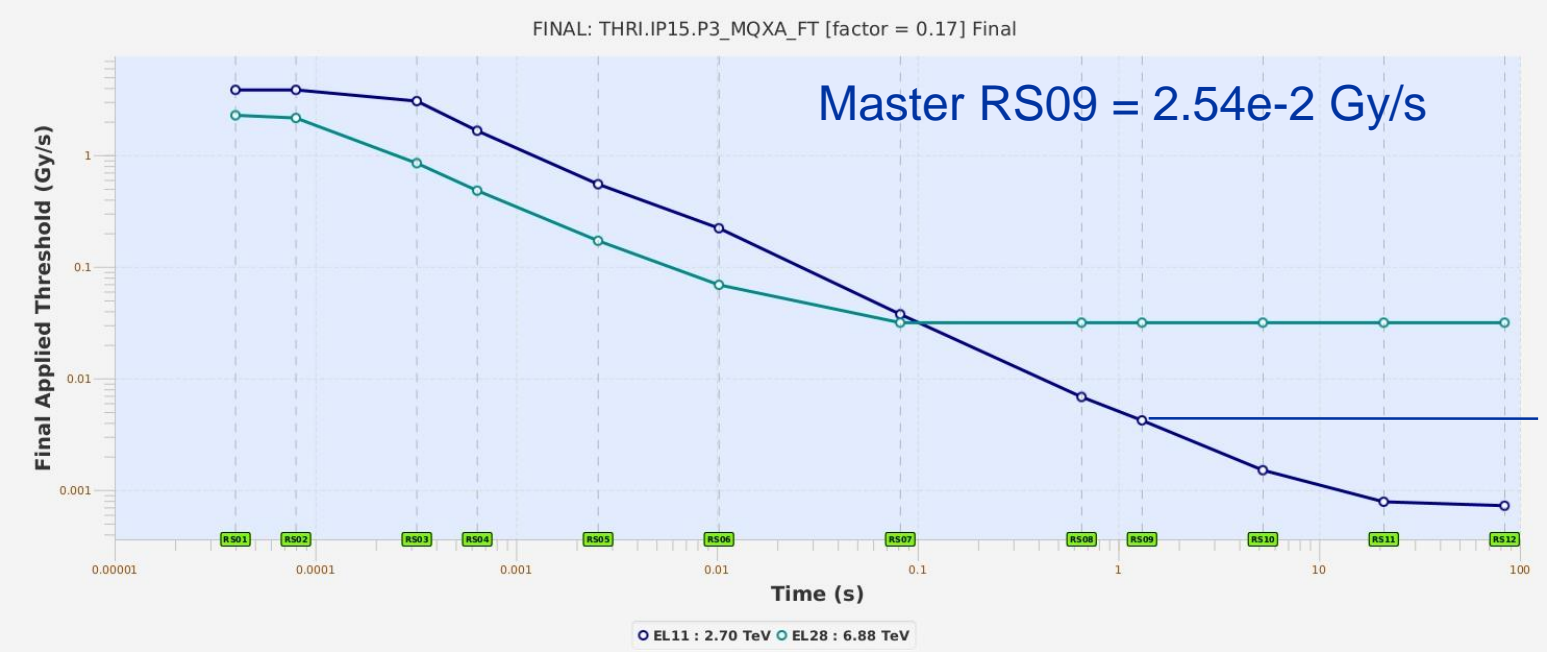


IP1 and IP5

MonitorName	Dcum	MonitorFactor	Family	AppliedThreshold_Gys	MasterThreshold_Gys	RS	SignalTargetLumi_Gys	RatioToDumpPercent	Factor30	Experiment
BLMQI.02R5.B1E30_MQXB	13376.13	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000080	64.555906	2.151864	CMS
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BLMQI.02R5.B2I30_MQXB	13358.90	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000040	32.112325	1.070411	CMS
BLMQI.02L5.B1I30_MQXB	13299.89	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000039	31.915823	1.063861	CMS
BLMQI.01L5.B1I30_MQXA	13307.97	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000220	30.310798	1.010360	CMS
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BLMQI.02L1.B1I23_MQXB	26625.93	0.166	THRI.IP15.P23_MQXB_FT	0.000216	0.001302	RS12	0.000098	45.346178	1.511539	ATLAS
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BLMQI.02R1.B2I30_MQXB	29.75	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000044	35.640359	1.188012	ATLAS
BLMQI.03L1.B2E30_MQXA	26600.67	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000255	35.222025	1.174067	ATLAS

IP1 and IP5

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BLMQI.03R1.B1E30_MQXA	58.72	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000514	70.955310	2.365177	ATLAS
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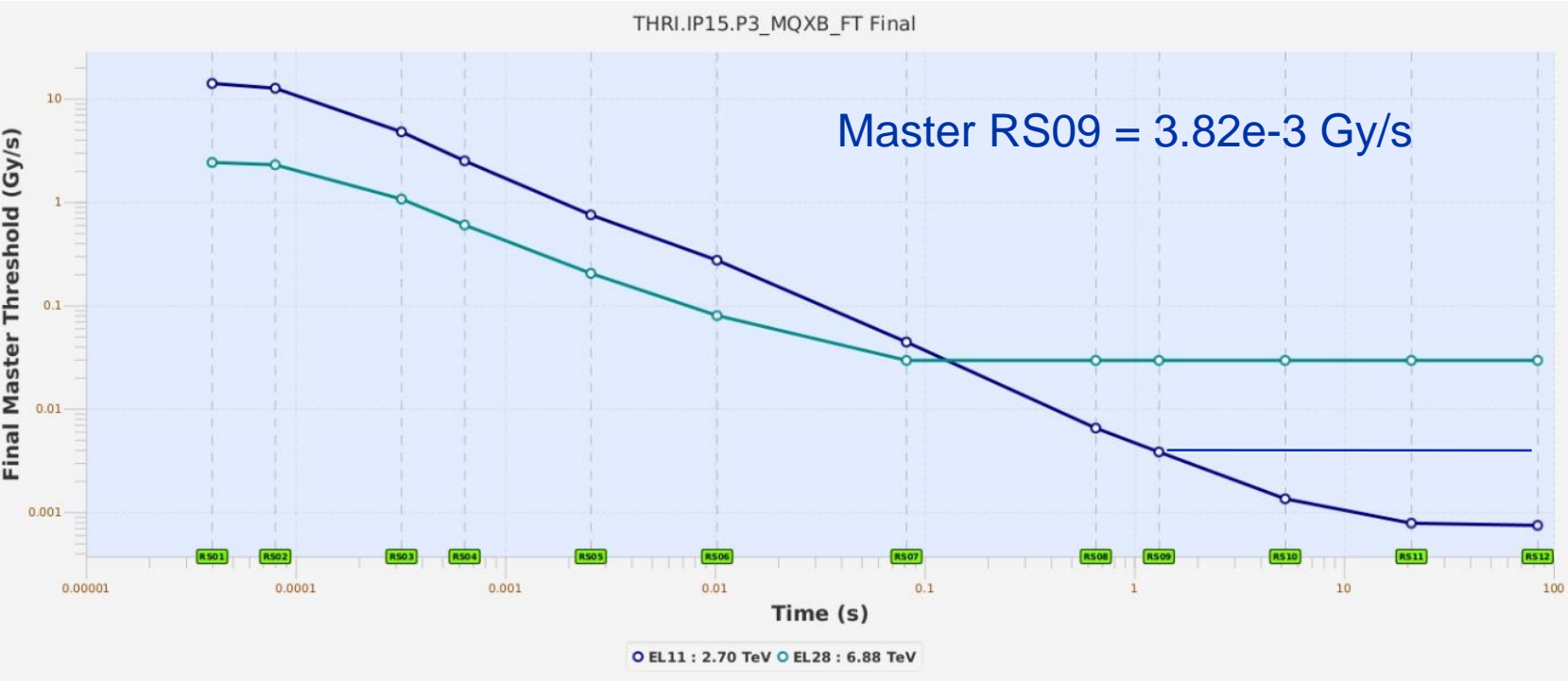
Increase is possible with MF but we propose to do ALL changes with master thresholds, for all families

Master Thresholds proposal
Fix to RS09 only in EL11

New value for the pp-ref run

IP1 and IP5

MonitorName	Dcum	MonitorFactor	Family	AppliedThreshold_Gys	MasterThreshold_Gys	RS	SignalTargetLumi_Gys	RatioToDumpPercent	Factor30	Experiment
BLMQI.03R1.B1E30_MQXA	58.72	0.166	THRI.IP15.P3_MQXA_FT	0.000724	0.004364	RS12	0.000514	70.955310	2.365177	ATLAS
BLMQI.02R5.B1E30_MQXB	13376.13	0.166	THRI.IP15.P3_MQXB_FT	0.000124	0.000744	RS12	0.000080	64.555906	2.151864	CMS



Increase is possible with MF but we propose to do ALL changes with master thresholds, for all families

Master Thresholds proposal
Fix to RS09 only in EL11

New value for the pp-ref run

Loss maps - 3rd October 2024

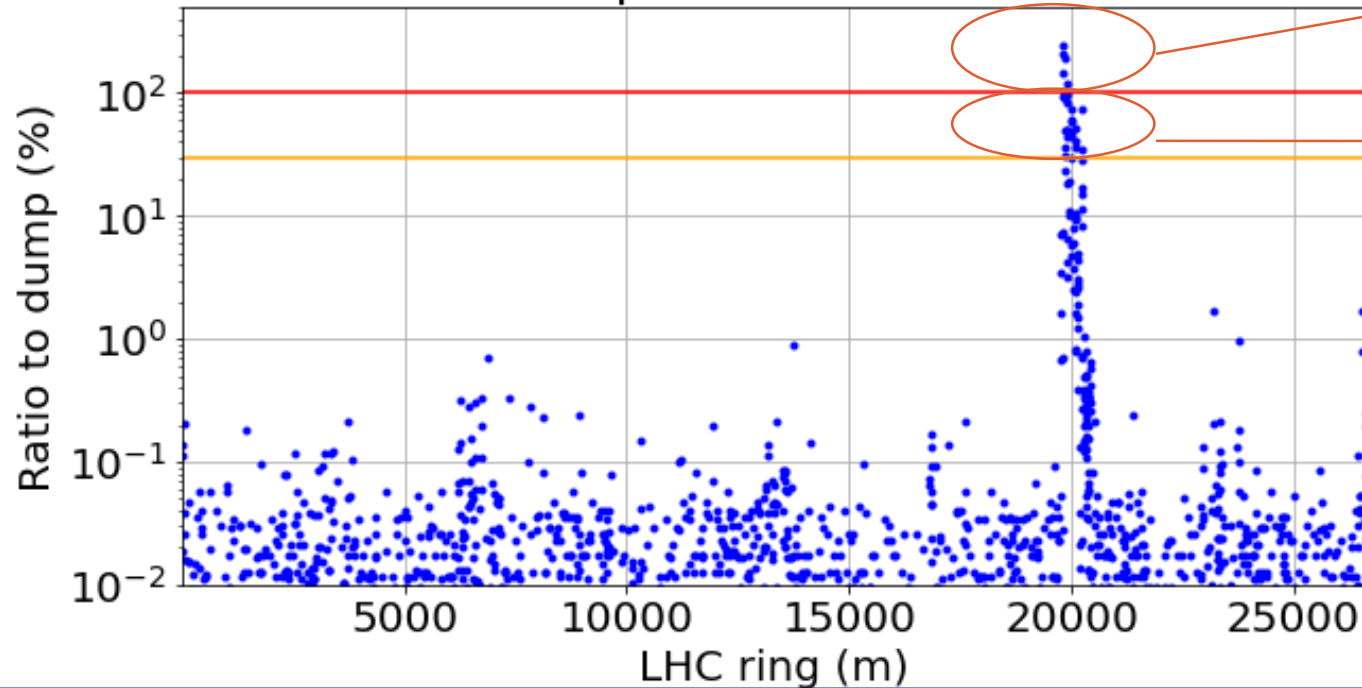
Scaling loss maps losses to assess the needed factor on the BLM thresholds to allow 300 kW (with the present MF = 0.6)

Loss maps:

- 19th September 2024: beam was dumped during B1V loss map and TCT centers were not correct.
- 3rd October 2024: the 4 type of loss maps repeated. **We use this setup.**

Main limitation shown in RS08

Ratio to dump for 300kW - RS08 - B1V

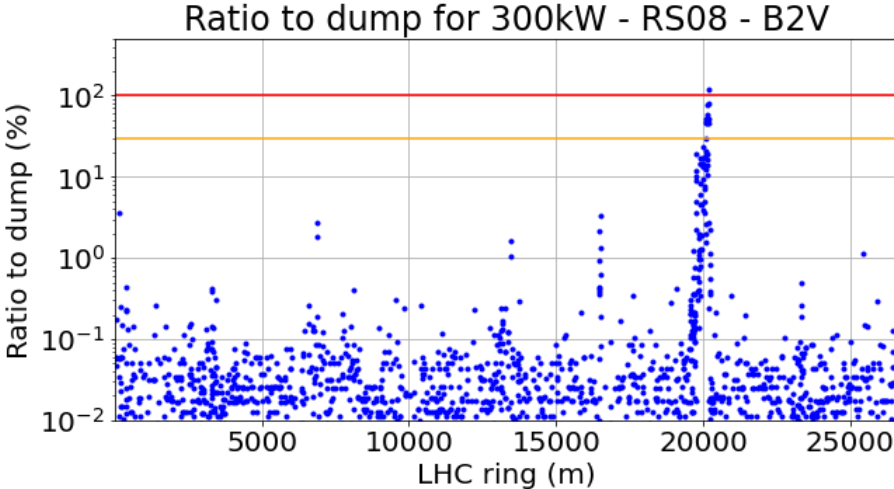
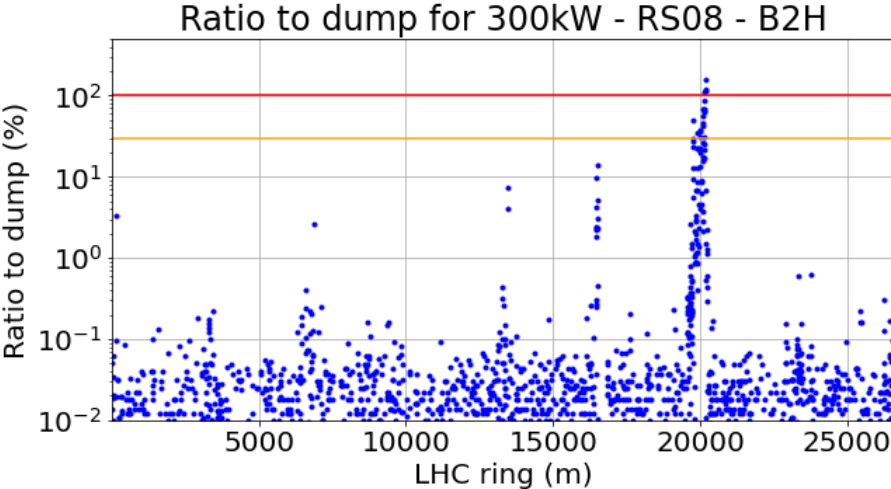
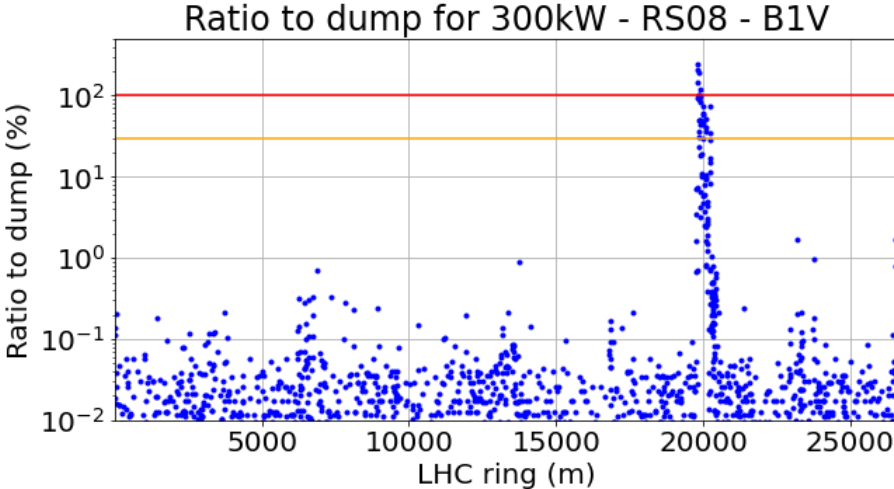
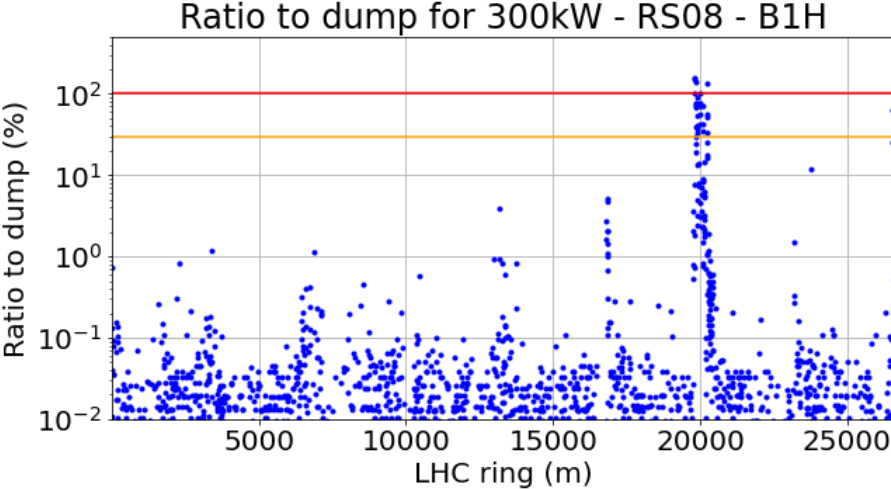


Monitors that will dump with losses below 300 kW

Monitors in warning at 300kW

Loss maps - 3rd October 2024

B1V is the main limiting but ALL are taken into account for the calculation of thresholds.



Factors needed to reach 300kW

- Combine the 4 loss map types to get the list of most limiting monitors and the factors needed

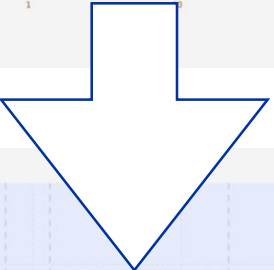
MonitorName	Dcum	MonitorFactor	Family	AppliedThreshold_Gys	LossmapLimiting	Signal_300kW_Gys	NeededFactor
BLMTI.06L7.B1W10_TCP.C6L7.B1	19791.95	0.600	THRI_COLL_7_TCPPM_WALL	0.197992	B1V	0.485437	2.451804
BLMTI.06L7.B1W10_TCP.B6L7.B1	19794.05	0.600	THRI_COLL_7_TCP_WALL	0.275996	B1V	0.572396	2.073924
BLMQI.05L7.B1E10_MQWA.D5L7	19855.65	0.600	THRI.IP7_MQW_FT	0.160148	B1V	0.306233	1.912182
BLMTI.06L7.B2W10_TCLA.B6L7.B2	19808.49	0.600	THRI_COLL_7_TCLA_HI_WALL	0.233495	B1H	0.368561	1.578454
BLMTI.06R7.B2I10_TCP.B6R7.B2	20194.27	0.600	THRI_COLL_7_TCP	2.256985	B2H	3.491655	1.547044
BLMQI.06R7.B1E10_MQTL	20219.17	0.600	THRI.IP7.P1_MQTL_FT	0.001872	B1H	0.002530	1.351522
BLMTI.06R7.B2I10_TCP.C6R7.B2	20196.27	0.600	THRI_COLL_7_TCPPM	2.365025	B2V	2.867646	1.212522
BLMTI.05L7.B2I10_TCSG.B5L7.B2	19901.04	0.600	THRI_COLL_7_TCSG_ME	0.894953	B1V	1.074330	1.200432
BLMTI.06R7.B1E10_TCLA.B6R7.B1	20180.09	0.605	THRI_COLL_7_TCLA_HI	3.166593	B2H	3.789724	1.196783
BLMQI.05R7.B2I10_MQWA.D5R7	20132.68	0.600	THRI.IP7_MQW_FT	0.160148	B2H	0.178697	1.115818
BLMTI.06L7.B2I10_TCSG.6L7.B2	19846.17	0.600	THRI_COLL_7_TCSG_ME	0.894953	B1V	0.925625	1.034271
BLMTI.06L7.B2I10_TCLA.A6L7.B2	19839.37	0.600	THRI_COLL_7_TCLA_HI	3.140422	B1V	3.230461	1.028671
BLMTI.04L7.B1E10_TCSG.A4L7.B1	19992.03	0.600	THRI_COLL_7_TCSG_LO	0.397790	B1H	0.401019	1.008116
BLMTI.05L7.B1E10_TCSG.A5L7.B1	19897.04	0.600	THRI_COLL_7_TCSG_ME	0.894953	B1V	0.873683	0.976233
BLMTI.06L7.B1E10_TCP.D6L7.B1	19790.05	0.600	THRI_COLL_7_TCPPM	2.365025	B1V	2.248413	0.950693
BLMTI.06L7.B2I10_TCSPM.6L7.B2	19844.43	0.600	THRI_COLL_7_TCSPM_HI	1.343550	B1V	1.265851	0.942169
BLMTI.06L7.B1E10_TCSG.A6L7.B1	19833.81	0.600	THRI_COLL_7_TCSG_HI	1.743655	B1V	1.593136	0.913676

Propose to change these families

Needed factor cannot be reached via Monitor Factor

Modification of 6 families

Primary collimators (TCPMP) - Beam 1



FACTOR CORRECTION RS08-RS12 of 2.5 on EL11

Correction Panel

AD_HOC_FACTOR_CORRECTION

OFF_BITS_CORRECTION

AD_HOC_FACTOR_CORRECTION

MAX_BITS_CORRECTION

AD_HOC_FACTOR_CORR... ▼

A... MOVE ... MOVE ...

Delete

COMMIT TO STAGE

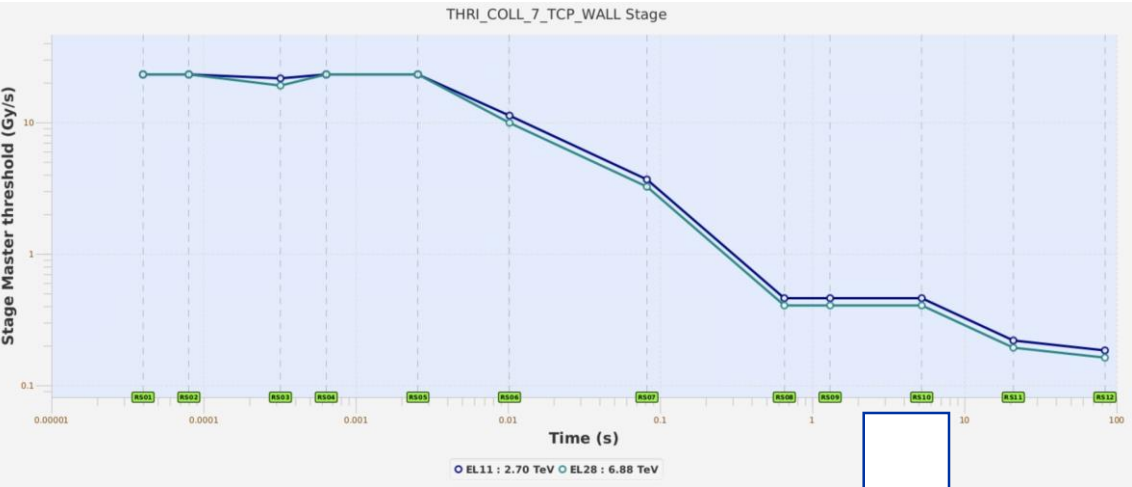
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<input type="checkbox"/> Beam_lvl 2	<input type="checkbox"/> Beam_lvl 18	ScaleRS 2	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 3	<input type="checkbox"/> Beam_lvl 19	ScaleRS 3	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 4	<input type="checkbox"/> Beam_lvl 20	ScaleRS 4	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 5	<input type="checkbox"/> Beam_lvl 21	ScaleRS 5	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 6	<input type="checkbox"/> Beam_lvl 22	ScaleRS 6	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 7	<input type="checkbox"/> Beam_lvl 23	ScaleRS 7	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 8	<input type="checkbox"/> Beam_lvl 24	ScaleRS 8	<input type="text" value="2.5"/>
<input checked="" type="checkbox"/> Beam_lvl 11	<input type="checkbox"/> Beam_lvl 27	ScaleRS 9	<input type="text" value="2.5"/>
<input type="checkbox"/> Beam_lvl 12	<input type="checkbox"/> Beam_lvl 28	ScaleRS 10	<input type="text" value="2.5"/>
<input type="checkbox"/> Beam_lvl 13	<input type="checkbox"/> Beam_lvl 29	ScaleRS 11	<input type="text" value="2.5"/>
<input type="checkbox"/> Beam_lvl 14	<input type="checkbox"/> Beam_lvl 30	ScaleRS 12	<input type="text" value="2.5"/>
<input type="checkbox"/> Beam_lvl 15	<input type="checkbox"/> Beam_lvl 31		
<input type="checkbox"/> Beam_lvl 16	<input type="checkbox"/> Beam_lvl 32		

Set all beam levels Unset all beam levels

Order ID 3 Finish Editing Cancel

Primary collimators (TCP) - Beam 1

FACTOR CORRECTION RS08-RS12 of 2 on EL11



Correction Panel

AD_HOC_FACTOR_CORRECTION
 OFF_BITS_CORRECTION
 AD_HOC_FACTOR_CORRECTION
 MAX_BITS_CORRECTION

<input type="checkbox"/> Beam_lvl 1	<input type="checkbox"/> Beam_lvl 17	ScaleRS 1	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 2	<input type="checkbox"/> Beam_lvl 18	ScaleRS 2	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 3	<input type="checkbox"/> Beam_lvl 19	ScaleRS 3	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 4	<input type="checkbox"/> Beam_lvl 20	ScaleRS 4	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 5	<input type="checkbox"/> Beam_lvl 21	ScaleRS 5	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 6	<input type="checkbox"/> Beam_lvl 22	ScaleRS 6	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 7	<input type="checkbox"/> Beam_lvl 23	ScaleRS 7	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 8	<input type="checkbox"/> Beam_lvl 24	ScaleRS 8	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 9	<input type="checkbox"/> Beam_lvl 25	ScaleRS 9	<input type="text" value="2"/>
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<input type="checkbox"/> Beam_lvl 13	<input type="checkbox"/> Beam_lvl 29		
<input type="checkbox"/> Beam_lvl 14	<input type="checkbox"/> Beam_lvl 30		
<input type="checkbox"/> Beam_lvl 15	<input type="checkbox"/> Beam_lvl 31		
<input type="checkbox"/> Beam_lvl 16	<input type="checkbox"/> Beam_lvl 32		

AD_HOC_FACTOR_CORR...
 A... MOVE ... MOVE ...
 Delete
 COMMIT TO STAGE

Set all beam levels Unset all beam levels

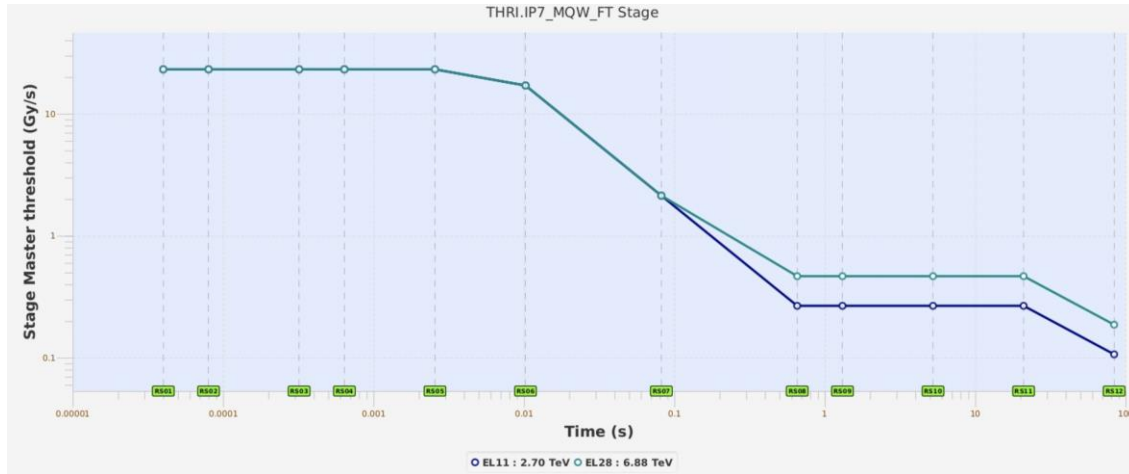
Order ID 3 Finish Editing Cancel

Primary collimators (TCP) - Beam 2



FACTOR CORRECTION RS08-RS12 of 1.5 on EL11

Warm magnets



EL11 reaching same level as 6.8 TeV

FACTOR CORRECTION RS08-RS12 of 2 on EL11

Correction Panel

AD_HOC_FACTOR_CORRECTION
 OFF_BITS_CORRECTION
 AD_HOC_FACTOR_CORRECTION
 MAX_BITS_CORRECTION

AD_HOC_FACTOR_CORR...
 A... MOVE ... MOVE ...
 Delete
 COMMIT TO STAGE

<input type="checkbox"/> Beam_lvl 1	<input type="checkbox"/> Beam_lvl 17	ScaleRS 1	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 2	<input type="checkbox"/> Beam_lvl 18	ScaleRS 2	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 3	<input type="checkbox"/> Beam_lvl 19	ScaleRS 3	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 4	<input type="checkbox"/> Beam_lvl 20	ScaleRS 4	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 5	<input type="checkbox"/> Beam_lvl 21	ScaleRS 5	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 6	<input type="checkbox"/> Beam_lvl 22	ScaleRS 6	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 7	<input type="checkbox"/> Beam_lvl 23	ScaleRS 7	<input type="text" value="1"/>
<input type="checkbox"/> Beam_lvl 8	<input type="checkbox"/> Beam_lvl 24	ScaleRS 8	<input type="text" value="2"/>
<input type="checkbox"/> Beam_lvl 9	<input type="checkbox"/> Beam_lvl 25	ScaleRS 9	<input type="text" value="2"/>
<input type="checkbox"/> Beam_lvl 10	<input type="checkbox"/> Beam_lvl 26	ScaleRS 10	<input type="text" value="2"/>
<input checked="" type="checkbox"/> Beam_lvl 11	<input type="checkbox"/> Beam_lvl 27	ScaleRS 11	<input type="text" value="2"/>
<input type="checkbox"/> Beam_lvl 12	<input type="checkbox"/> Beam_lvl 28	ScaleRS 12	<input type="text" value="2"/>
<input type="checkbox"/> Beam_lvl 13	<input type="checkbox"/> Beam_lvl 29		
<input type="checkbox"/> Beam_lvl 14	<input type="checkbox"/> Beam_lvl 30		
<input type="checkbox"/> Beam_lvl 15	<input type="checkbox"/> Beam_lvl 31		
<input type="checkbox"/> Beam_lvl 16	<input type="checkbox"/> Beam_lvl 32		

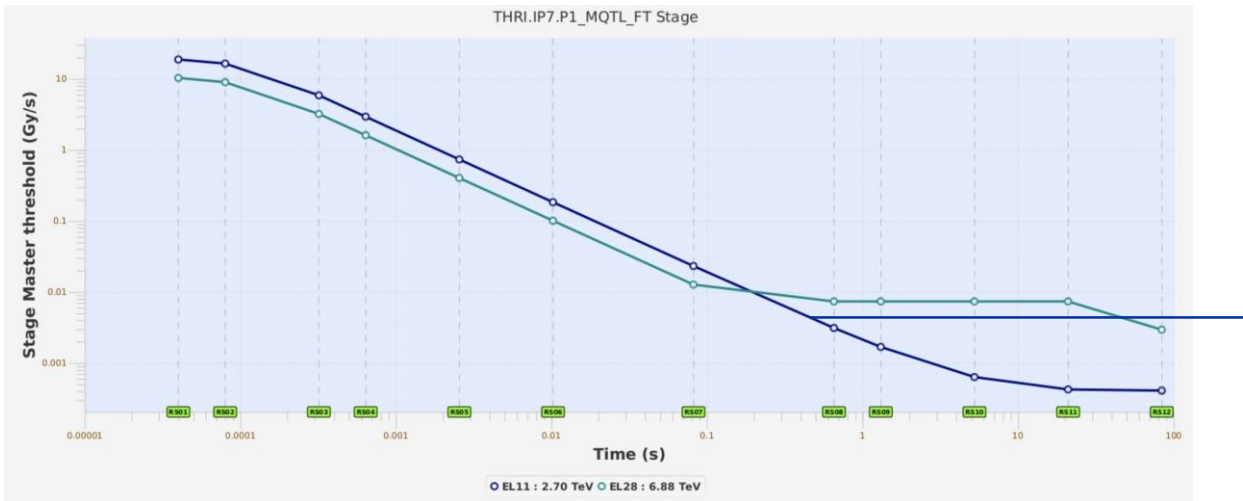
Set all beam levels Unset all beam levels
 Order ID 3 Finish Editing Cancel

TCLA of Beam 2 - for losses on Beam 1



FACTOR CORRECTION RS08-RS12 of 1.6 on EL11

MQTL Q6



We need to add the Flat Top Corrections at EL11:

FIX RS08-RS12 to RS08 on EL11 will provide a 220 KW limit.

In order to reach 300 kW we would need 2 corrections (but first option is preferred):

FACTOR CORRECTION RS08 of 1.35 on EL11
FIX RS08-RS12 to RS08 on EL11

Summary

Reason	Family	Correction
Lumi: IP8 TCT	THRI_TCT	Fix RS10-RS12 to RS10 in EL11
Lumi: IP8 TCT	THRI_TCTVB_OI_RC0	Fix RS10-RS12 to RS10 in EL11
Lumi: IP8 Triplet	THRI.IP28.P3_MQXA_FT	Fix RS08-RS12 to RS08 for EL11
Lumi: IP1/IP5 Triplet	THRI.IP15.P3_MQXA_FT	Fix RS10-RS12 to RS09 in EL11
Intensity: TCP	THRI_COLL_7_TCPPM_WALL	FACTOR CORRECTION RS08-RS12 of 2.5 on EL11
Intensity: TCP	THRI_COLL_7_TCP_WALL	FACTOR CORRECTION RS08-RS12 of 2 on EL11
Intensity: TCP	THRI_COLL_7_TCP	FACTOR CORRECTION RS08-RS12 of 1.5 on EL11
Intensity: MQW	THRI.IP7_MQW_FT	FACTOR CORRECTION RS08-RS12 of 2 on EL11
Intensity: TCLA	THRI_COLL_7_TCLA_HI_WALL	FACTOR CORRECTION RS08-RS12 of 1.6 on EL11
Intensity: Q6	THRI.IP7.P1_MQTL_FT	FIX RS08-RS12 to RS08 on EL11