



ALICE

RUN2 Plans Update

Federico Ronchetti

CERN, July 31st 2014

ALICE PB



Base Concepts

HI Energies

- **Pb-Pb @ 5.02 TeV and p-Pb @ 8.0 TeV**
→ **$E_b = 6.3Z$ TeV (optics change)**
- **Pb-Pb @ 5.1 TeV and p-Pb @ 8.2 TeV**
→ **$E_b = 6.5Z$ TeV (no optics change)**

Principles

- **Limit the HI time consumption**
 - (optics change, pp reference runs, new setups)
- **5.1 and 5.02 TeV are equivalent for systematics**
 - Favor 5.1 TeV for PbPb
 - Favor 5.02 TeV pp-ref (setup time to be paid anyway)
- **Same collision energy for all samples**
 - Discussion is still ongoing for pPb



RUN2 Possible Strategy

Year	System	E [TeV]	Lumi [$\text{cm}^{-2}\text{s}^{-1}$]	R [kHz]	LL	Weeks	Trig	Time
2015	pp 50ns	13	$10^{29} - 10^{32}$	10-600	YES	3	MIX	pp
	pp	13	$5 \times 10^{29} - 3 \times 10^{30}$	50-300	YES	18+1	MIX	pp
	PbPb	5.1	10^{27}	8	YES	4	MB	HI
	pp-ref	5.1/5.02	$10^{29} - 2 \times 10^{30}$ (*)	10-200	YES	1.4	MIX	pp
2016	pp	13	10^{31}	500	YES	22+2	MIX	pp
	pPb	5.1(8.0/8.2)	10^{28}	10-20	YES	2 + N	MB	HI - L.I.
	pPb	5.1(8.0/8.2)	10^{29}	200	YES	2 - N	RARE	HI
	pp-ref	5.1(8.0/8.2)	-	-	-	-	-	pp 2015/2012/YES
2017	pp	13	10^{31}	500	YES	22+2	MIX	pp
	PbPb	5.1	10^{27}	8	YES	4	MB	HI
	pp-ref	5.1	-	-	-	-	-	pp
2018		"pp"	LS2 (1/7/18 → 18 months)					

(*) hypothetical

$15 \text{ pb}^{-1} \text{ pp-ref} \sim 0.5 \text{ nb}^{-1} [3-4 \times 10^4 \times \int \text{Ldt (PbPb)}]$

L.I. = low intensity filling scheme



New Setups: β^* Leveling

Original JJ statement...

J.M. Jowett & M. Schaumann, LBOC meeting, 15/4/2014

- Expect some gains from β^* -levelling for ALICE
 - Initial beam process for squeeze could be shorter
 - Higher luminosity for longer during fill
 - ALICE integrated luminosity closer to ATLAS/CMS

From additional discussion: B^* leveling is **not particularly appealing for ALICE alone**

- **Need ad-hoc commissioning and setup time** in ALICE
- Variation of the luminous region size affects both the X (separation) and Y planes, even if overall effect is partially compensated by smaller beam geometrical emittance at higher energy
- Luminous region varies with time from from the initial B^* (2m) to the nominal (0.5m), needs **time dependent calibration (for first part of the fill)**
- **Any larger transverse dimension has potential impact on tracking of low multiplicity events (where LR is used to constrain vertex)**