



ALICE



HONEXCOMB

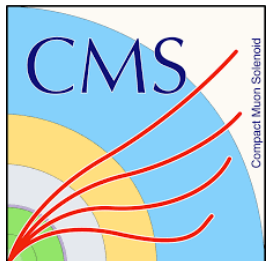
(Heavy ion experimental combination)

– Network Activity –

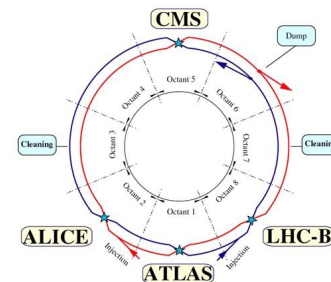
R. Granier de Cassagnac

for 33 heavy-ion physicists

Nantes, November 1st 2017



The basic idea



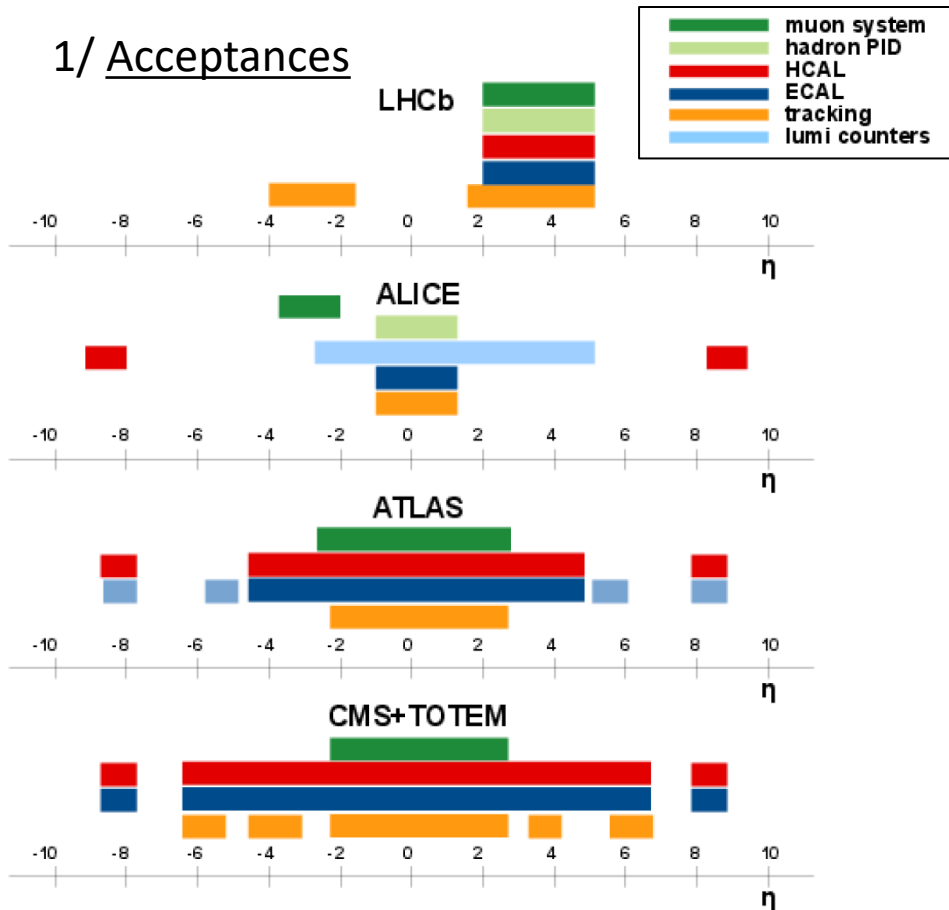
At the CERN LHC

1. To combine results from heavy-ion experiments
2. To establish cross-collaboration discussions

Came out from an informal discussion in the Paris area, wondering what we missed in the past, what we need for the future...

A fact: complementary experiments

1/ Acceptances

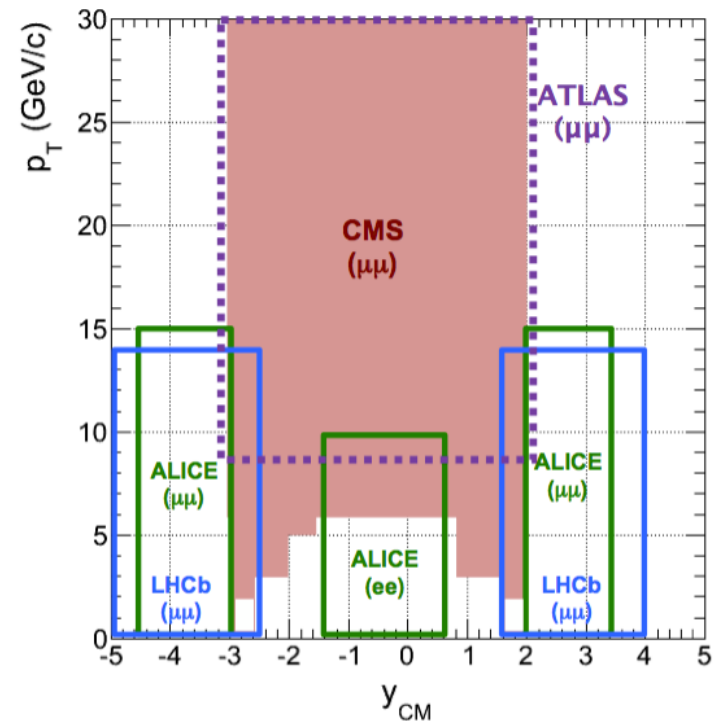


2/ Particle identification

Hadron PID in ALICE and LHCb

3/ Bandwidth & triggering

Minimum bias or rare processes
Incl. pp collisions (and pile-up)



→ Concrete complementarity example
Published J/ψ coverage in pPb @ 5 TeV

What did we miss?

- During (finished) run 1 and (on-going) run 2
 - Legacy or white papers: everything you always wanted to know about your favourite probe (but were afraid to ask)
 - (jets, correlations, heavy flavours, quarkonia...)
 - Combinations when statistical significance was low
 - (electroweak bosons in pPb to constrain nPDF, evidence for light-by-light scattering→discovery...)
 - Common observables, at least common selections
 - (collectivity in pp and pA, fragmentation of jets...)
 - Better and common pp references
 - Two ALICE+LHCb notes already exist on quarkonia

Why did we miss? How to solve?

- Lack of communication
 - Highlighted in recent workshops
- Lack of manpower
 - In particular in the “smaller” heavy-ion experiments
 - We all naturally care first about our own results
 - Manpower is not raising, and even dramatically decreasing in some places!
- Need for dedicated manpower to start

What do we need?

- At least one person per experiment feeling responsible for cross-experiment activities
 - At the postdoctoral level
 - Better if changing experiment (hence 3 years)
 - Better if stationed at CERN
 - (to talk together, and with the collaborations)
- A common hiring process
 - One call for the four postdocs
 - Small hiring committee (TBD)
 - Optimize selection to span the largest physics interests

Which physics topics?

- No limit a priori on the subjects of interest!
 - Look at all opportunities
- Capitalising on the expertise of the interested (European) individuals, see next slide...
- But inviting others to contribute (in particular non-Europeans)

Interested experimentalists

- ALICE: Anton Andronic (GSI), Roberta Araldi (Torino), Peter Braun-Munzinger (EMMI/GSI), Philippe Crochet (Clermont), Torsten Dahms (München), Michele Floris (Derby), Peter Jones (Birmingham), Christian Klein-Boesing (Muenster), Antonin Maire (Strasbourg), Gines Martinez (Nantes), André Mischke (Utrecht), Johanna Stachel (Heidelberg), Christophe Suire (Orsay)
- + (new) Alberto Baldisseri (CEA), Jaroslav Bielčik (Prague), Raphaël Tieulent (Lyon), Yves Schutz (Strasbourg)
- ATLAS: Martin Spousta (Prague), Iwona Grabowska-Bold (Krakow), Adam Trzupek (Krakow)
- CMS: Raphaël GdC (LLR), Matthew Nguyen (LLR), Ferenc Siklér (Budapest)
- LHCb: Frédéric Fleuret (LLR/LAL), Giulia Manca (Cagliari), Michael Schmelling (Heidelberg)
- + (new) Patrick Koppenburg (NIKHEF)

Quarkonia
Heavy flavours
Soft/light (uds)
Jets / photons
Electroweak
Other

Main activities

- Postdocs will animate an open forum in which needs for common work will be discussed (1/month)
 - + A kick-off meeting to initiate the process
- Perform comparative studies, combine results (with proper statistical tools), think of common publications...
 - At least the postdocs, hopefully others
 - ≥ 4 joint publications (one per year or postdoc) would be a success
- Potential to become a unique place of discussion
 - Comparison of methods, even selections, centrality or multiplicity definitions, beam requests, etc.
 - Hence to impact the run 3 and 4 strategies...
- Think about the long-term idea of cross-collaboration analyses and data preservation (DPHEP initiative)...
- (A bit similar to hep combination working groups, but with heavy ion specificities)

Link with theorists

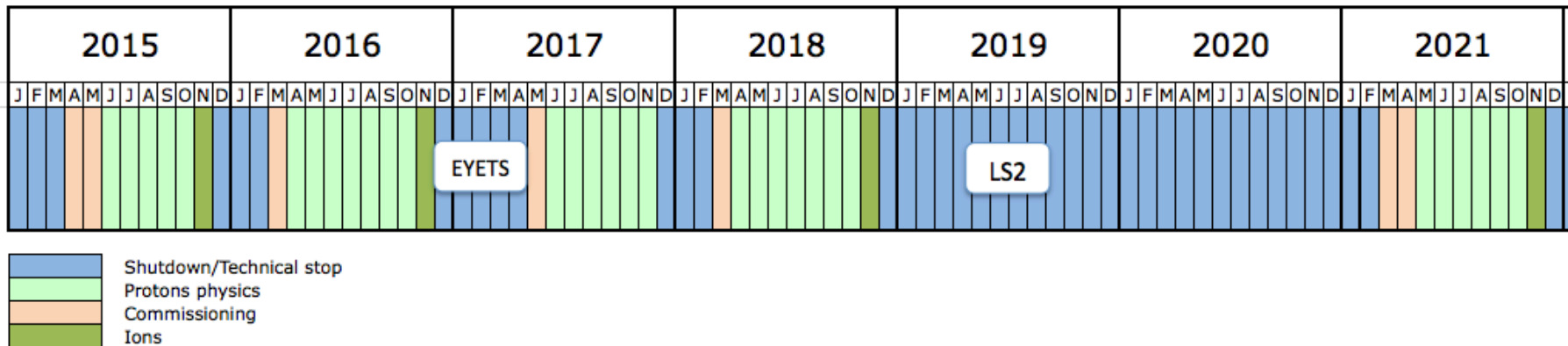
- Combined (unique) results useful for community (and generator makers)
- Need for theoretical input for proper combination
- Already interested theorists:
 - François Arleo (LLR), Nestor Armesto (Santiago), Elena Bratkovskaya (Frankfurt), Magdalena Djordjevic (Belgrade), Elena Ferreiro (Santiago/LLR), Guilherme Milhano (LIP), Jean-Yves Ollitrault (Saclay)...
 - (with good topical overlap with the experimentalists)

Governance

- Risk to violate collaboration internal rules!
 - First focus on published data
 - Have the management on-board (started...)
 - Raise awareness of participants (postdocs)
- Possibility to have one “coordinator” per experiment
 - Better if the postdoc advisor, hence not decided beforehand...
 - (One spokesperson for the Lol, can be changed)

Good timing

- Typically starting at the end of run 2 (Nov. 2018)
 - Make up the best of run 2
 - Prepare for run 3



- Bet that once initiated, the working group will naturally continue, after H2020...

Indicative budget

- 700 k€ + overheads (to be consolidated)
 - 600 k€ \approx 4 x 3-year postdocs
 - (depending on the country, but probably too tight to live at CERN)
 - 100 k€ \approx travel budget, incl. inviting experts (e.g. theorists), in particular to a kick-off meeting
- Using own travel budgets, and remote work



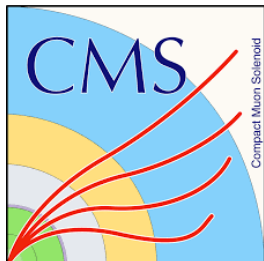
ALICE

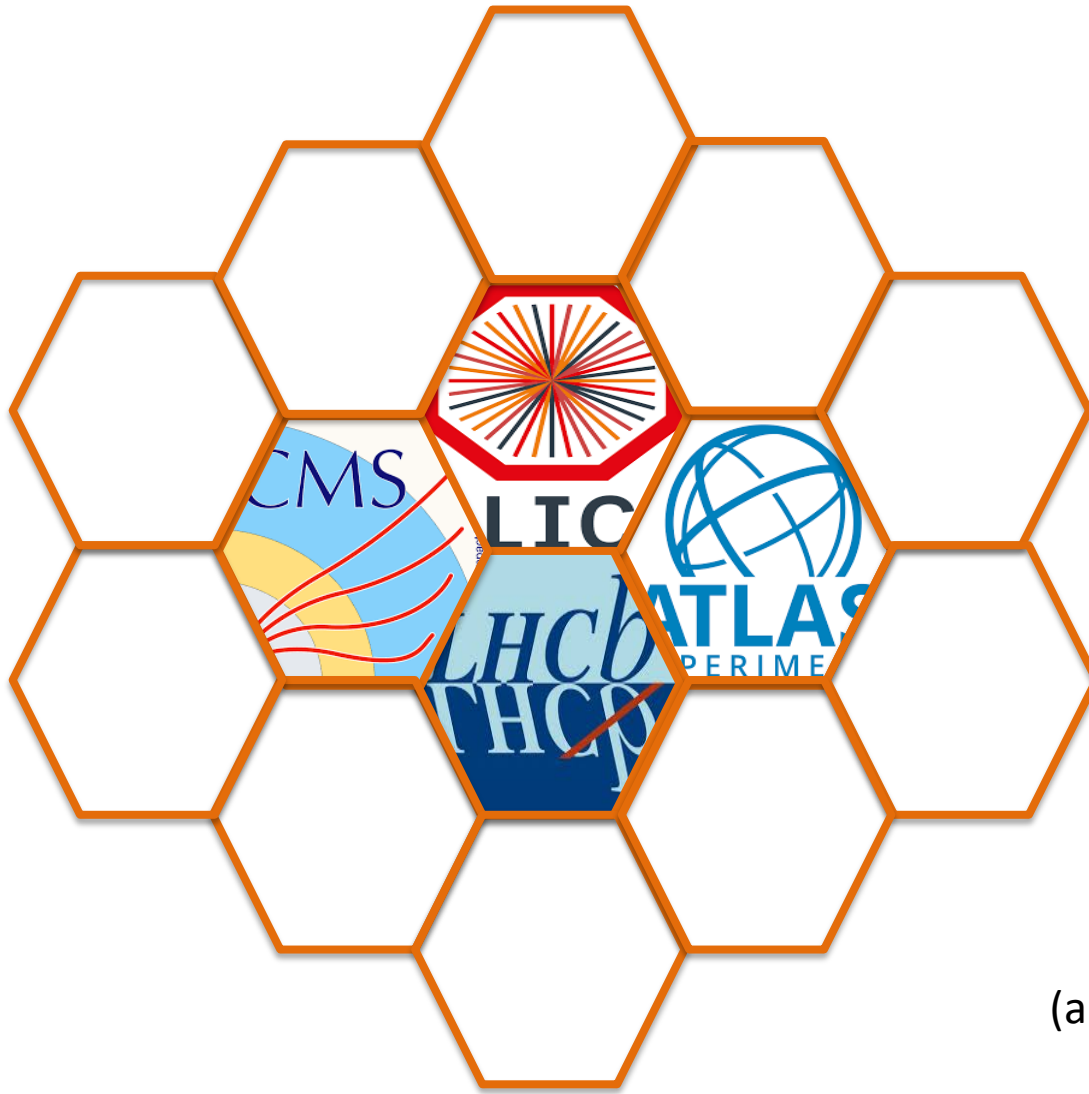


HONEXCOMB

(Heavy ion experimental combination)

– Network Activity –





(art in progress)