

Forward physics and heavy ions at LHC CERN yellow report

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Chapter on Forward Heavy-Ions

- ❖ A dedicated chapter on heavy-ion physics in the forward physics
- ❖ We expect about 20 pages in total
- ❖ **Particular scope:** Particular focus on Low-x physics, and electromagnetic processes

Chapter on Forward Heavy-Ions

- ❖ Cover material on $A+A$ and $p+A$ collisions, so far $A = \text{Pb}$
- ❖ Discuss published LHC results on heavy-ion physics in the forward region
- ❖ Discussion with theorists about new ideas, measurements that could be interesting
- ❖ Prospects of new measurements, specific requirements

Examples of Physics topics

- ❖ **Saturation statues from AA/pA, for example,**
 - ❖ Forward direct photons, parton energy loss measurements via forward neutral pions in Pb–Pb
 - ❖ Exclusive vector meson production in pA
- ❖ **Shadowing processes, for example,**
 - ❖ Photonuclear reactions, VM and dijets in UPC
- ❖ **Other relevant analyses**
 - ❖ Two-photon process, Higgs production

Chapter on Forward Heavy-Ions

- ❖ What would be the requirements in terms of luminosity and running conditions to perform new measurements relevant for Forward HI
- ❖ What would be the impact of the already planned / discussed LHC upgrades on these measurements, for both Run2 and Run3
- ❖ Complementarity of each experiment for future measurements

Chapter Structure

About 20 pages long

- ❖ Introduction
- ❖ General overview, discuss published results from all experiments, discussion on existing / new theory ideas
- ❖ Prospects for new measurements, impact from planned / proposed? LHC upgrade on these measurements
- ❖ Discussion and summary

Next steps

- ❖ Contact the experiments representatives in the LHC WG and request inputs from them and their experiments
- ❖ In particular, general outlines about LHC upgrades, running conditions, luminosity, etc.
- ❖ Discussion with theorists

LHC WG meeting and future directions on forward heavy-ion physics

- ❖ 3-6 September 2014
- ❖ Lawrence and Kansas City
- ❖ <https://indico.cern.ch/event/297878/>

