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## LHCb: Heavy ion physics results and prospects

*Friday, 11 September 2020 08:30 (30 minutes)*

In 2016, LHCb collected 12.5 and 17.4 inverse nanobarns in pPb and PbPb collisions, respectively. These new high statistics samples are essential to study the CNM effects and to disentangle them from those associated with QGP formation in PbPb collisions. The LHCb forward geometry provides coverage over two independent rapidity ranges in the centre-of-mass frame when the p and Pb beams are inverted: 1.5 to 4.0 for pPb collisions and  $-5.0$  to  $-2.5$  for PbPb collisions. In 2018, LHCb recorded  $\sim 210$  inverse microbarns integrated luminosity of PbPb collisions at center-of-mass = 5.02 TeV. Although limited to peripheral hadronic collisions, this new dataset offers unique opportunities to study simultaneously open and close heavy flavor production, at forward rapidity and down to zero pT, at the LHC. The largely unknown parton distribution functions of nuclei and the similarities observed between high-multiplicity pp and pPb events compared to PbPb, often described by means of hydrodynamics, are the main motivations for an extended pPb data taking program during LHC Run 3 and Run 4. The future increase in luminosity combined with the LHCb unique and improved detector capabilities in the upgrade will allow to perform new and precise measurements. Moreover, an upgraded internal gas target is going to be installed for the LHCb run 3 fixed target program, allowing a wider choice of gas species and an increase of the gas density by up to two order of magnitude. In this talk, we present the latest results on heavy flavor productions obtained by the LHCb collaboration in heavy ions collisions as well as prospects on both the heavy ions collisions and fixed target programs.

### Is this abstract from experiment?

Yes

### Name of experiment and experimental site

LHCb

### Is the speaker for that presentation defined?

Yes

### Details

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