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Results on heavy ion physics at LHCb

In the last years the LHCb experiment established itself as an important contributor to heavy ion physics by exploiting some of its specific features. Production of particles, notably heavy flavour states, can be studied in p-p, p-Pb and Pb-Pb collisions at LHC energies in the forward rapidity region (pseudorapidity between 2 and 5), providing measurements which are highly complementary to the other LHC experiments. Moreover, owing to its forward geometry, the detector is also well suited to study fixed-target collisions, obtained by impinging the LHC beams on gas targets with different mass numbers. This configuration allows to study pA collisions at the relatively unexplored scale of $\sqrt{s_{NN}} \sim 100$ GeV, and can also provide valuable inputs to cosmic ray physics.

An overview of the unique measurements obtained so far by the LHCb ion program will be given, with emphasis on the most recent results. In particular, the first results obtained in the fixed-target configuration will be

presented: the first measurement of antiproton production in proton-helium collisions, which is an input for the modelling of the expected antiproton flux in cosmic rays, and the first measurement of charm production in pHe and pAr collisions at the LHC, providing unprecedented access to the charm nPDF at large x.

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