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LHCb inputs to astroparticle physics

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The LHCb experiment has the unique possibility, among the LHC experiments, to be operated in fixed target mode, using its internal gas target SMOG. The excellent detector capabilities for vertexing, tracking and particle identification allow to measure exclusive particle production for collisions of protons on different nuclei at an energy scale of sqrt(sNN) ˜ 100 GeV, providing valuable inputs to the modelling of cosmic ray interactions in the atmosphere and in the cosmos.
In particular, by operating SMOG with helium, LHCb performed the first measurement of antiproton production in proton-helium collisions.
The results improve the accuracy of the prediction for secondary antiproton production in cosmic rays at the energy scale accessible to space-borne detectors.

Experimental Collaboration

LHCb

Presenter: FONTANA, Marianna (Universita e INFN, Cagliari (IT))

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