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Measurement of the fragmentation function for photon-tagged jets in 5.02 TeV Pb+Pb and pp collisions with the ATLAS detector

A measurement of the charged-particle fragmentation function (FF) for jets azimuthally balanced by a high transverse momentum (pT) prompt, isolated photon is presented. FFs as a function of particle-pT and fraction of the jet pT carried by the particle, z, are measured in 26/pb of pp and 0.49/nb of Pb+Pb collision data at 5.02 TeV recorded with the ATLAS detector. In pp collisions, a comparison of the photon-tagged jet FF to that for inclusively selected jets is sensitive to the difference in fragmentation between quark—and gluon–initiated jets in vacuum. The ratio of the FF in Pb+Pb events to those in pp events with the same selection on the photon kinematic variables provides information on the modification of the parton shower for quark-initiated jets as they traverse the hot nuclear medium. In comparison to the modified FF for inclusively-selected jets, photon-tagged jets show a similar modification in particle-pT or z in semi-central and peripheralevents, but a stronger one in central events.

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