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Boson-jet correlations and boson-tagged jet fragmentation functions in heavy ion collisions with CMS

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A typical approach to study the quark gluon plasma produced in heavy ion collisions is to understand the passage of elementary particles through it. As electroweak bosons such as photons and Z bosons do not participate in the strong interaction, their correlation with jets within the same event is a clean probe of the medium-induced energy loss of jets. With high statistics PbPb and pp collision data taken at a center-of-mass energy of 5.02 TeV with the CMS detector, boson-jet correlations and, for the first time in PbPb collisions, photon-tagged jet fragmentation functions have been measured. These measurements provide strong evidence for medium-induced jet energy loss and offer a first look at jet substructure in photon-jet events.

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