Contribution ID: **81** Type: **not specified**

Boson+Jet Correlation and Boson-Tagged Jet Substructure in pp and PbPb collisions at 5.02 TeV with CMS

Wednesday, 20 September 2017 18:40 (20 minutes)

A typical approach to study the medium produced in heavy ion collisions is to understand the passage of elementary particles through it. 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 (predominantly) quark jets. In this talk, Z+jet and photon+jet correlations are studied using the high statistics PbPb and pp data taken at a center-of-mass energy of $\sqrt{s_{NN}}$ = 5.02 TeV with the CMS detector. The evolution of azimuthal angular distributions and average momentum imbalance between the jet and Z or photon as a function of the transverse momentum of the color neutral probe will be presented. In addition the jet I_{AA}, as a function of photon p_T and collision centrality is studied. With the high statistics photon-jet sample collected from pp and PbPb collisions, the first measurement of photon-tagged jet shape and fragmentation function is reported in various of classes of event collision centrality.

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Session Classification: Heavy Flavors / EW bosons / Top quark