

## Measurement of inclusive isolated photons in PbPb collisions with CMS

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In studies of the dense medium produced in ultra-relativistic heavy ion collisions, photons are important hard probes, since they are not expected to be modified by the medium. The measurement of isolated prompt photon production in PbPb collisions provides a test of perturbative quantum chromodynamics (pQCD) and the information to constrain the nuclear parton distribution functions. CMS has shown excellent isolation capabilities in pp collisions at the LHC using the shower shape method.

In heavy-ion collisions, two independent methods, shower shape and isolation, are used to separate isolated photons from non-prompt photons. This is the first application of these pp photon isolation techniques in heavy ion collisions. Shower shape templates are created with studies of the response in the electromagnetic calorimeter. The latter method, based on the tracker and the calorimeter, is found to have consistent results with the former method. We report the first measurement of the transverse momentum spectra of isolated photons in PbPb collisions at a center-of-mass energy of 2.76 TeV per nucleon nucleon pair with the CMS detector. The results are compared to NLO calculations at an energy of 2.76 TeV. The centrality dependence of the nuclear modification factor will be reported for isolated prompt photons with  $p_T$  from 20 GeV/c to more than 80 GeV/c.

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