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Measurement of isolated direct photons in lead-lead collisions at 2.76 TeV with the ATLAS detector

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Direct photons are a powerful tool to study heavy ion collisions. Their production rates provide access to the initial state PDFs, which are expected to be modified by nuclear effects. They also provide a means to calibrate the expected energy of jets that are produced in the medium, and thus are a tool to probe the physics of jet quenching more precisely both through jet rates and fragmentation properties. The ATLAS detector measures photons with its hermetic, longitudinally segmented calorimeter, which gives excellent spatial and energy resolution, and detailed information about the shower shape of each measured photon. This gives powerful rejection against the expected background from neutral pions coming from jets. Rejection against jet fragmentation products is further enhanced by isolation criteria, which can be based on calorimeter energy or the presence of high p_T tracks. First results on the rates of isolated direct photons from approximately 140 μb^{-1} of lead-lead data will be shown, as a function of transverse momentum, pseudorapidity and centrality, and their rates compared to expectations from perturbative QCD.

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