Measurement of fully-reconstructed inclusive jet production in Au+Au collisions at √s_{NN} = 200 GeV by the STAR experiment

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The STAR Collaboration at RHIC reports the measurements of both charged and fully-reconstructed inclusive jet production in central (0-10%) and peripheral (60-80%) Au+Au collisions at √s_{NN} = 200 GeV. The charged jet analysis utilizes a dataset corresponding to 70 µb$^{-1}$ recorded in 2011, while the new fully-reconstructed jet analysis utilizes a dataset corresponding to 184 µb$^{-1}$ recorded in 2014. Both datasets were recorded using a Minimum Bias trigger. Jets are reconstructed using charged-particle tracks in the Time Projection Chamber and neutral energy measured by the Barrel Electromagnetic Calorimeter with $p_T (E_T) > 0.2$ GeV/c (GeV). Jet reconstruction is carried out using the anti-$k_T$ algorithm with resolution parameter $R = 0.2, 0.3$ and 0.4. The large background yield to the jet signal in heavy ion collisions is suppressed by requiring high-$p_T$ leading charged or neutral radiation in accepted jet candidates. The bias imposed by this requirement is assessed, and the $p_T$-region in which this bias is negligible is identified. Charged jet and fully-reconstructed jet inclusive distributions are reported in central and peripheral Au+Au collisions for $p_T^{jet} > 10$ GeV/c. Yield suppression, corresponding to medium-induced parton energy loss, is observed for central Au+Au collisions relative to both peripheral Au+Au collisions and vacuum reference. Medium-induced jet broadening is measured using the $R$-dependence of yields. The results are compared to jet measurements at the LHC and theoretical calculations.