

Abstract Submitted
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Searching for Muonic Atoms at STAR¹ KEFENG XIN, Rice University, STAR COLLABORATION — Hydrogen-like muonic atoms are Coulomb bound states of a muon and a hadron. In ultrarelativistic heavy-ion collisions, due to the high particle multiplicities, a produced muon can be directly bound to a charged hadron and form an atom. With muon identification at low transverse momentum from the Time-of-Flight (TOF) detector, STAR provides an great opportunity to search for the muonic atoms with exotic cores, such as anti-matter or strange cores. This is also an ideal tool to measure the thermal emission from the Quark-Gluon Plasma (QGP) via a direct measurement of the single muon spectrum. Because only thermal muons or muons from resonance decays are capable to form atoms, the background muons from weak decay are cleanly excluded. We will present the status of this analysis on the $\sqrt{s_{NN}} = 200$ GeV Au+Au collisions collected by STAR during RHIC runs in 2010 and 2011. Various methods and techniques, including invariant mass analysis, particle correlations and α distributions will be shown.

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