

Abstract Submitted
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Observation of an Excited B_c^\pm Meson State with the ATLAS Detector¹ AIDAN GRUMMER, University of New Mexico, ATLAS COLLABORATION — A search for excited states of the B_c^\pm meson is performed using 4.9 fb⁻¹ of 7 TeV and 19.2 fb⁻¹ of 8 TeV pp collision data collected by the ATLAS experiment at the LHC. A new state is observed through its hadronic transition to the ground state, with the latter detected in the decay $B_c^\pm \rightarrow J/\psi\pi^\pm$. The state appears in the $m(B_c^\pm\pi^+\pi^-) - m(B_c^\pm) - 2m(\pi^\pm)$ mass difference distribution with a significance of 5.2 standard deviations. The mass of the observed state is $6842 \pm 4 \pm 5$ MeV, where the first error is statistical and the second is systematic. The mass and decay of this state are consistent with expectations for the second S -wave state of the B_c^\pm meson, $B_c^\pm(2S)$.

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