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## Search for Dark Matter associated production with bottom quarks at LHC Run 2 with the ATLAS detector

*Friday, April 21, 2017 5:00 PM (1 hour)*

Dark Matter (DM) production and detection is one of the most challenging goal at the Large Hadron Collider (LHC). Despite there are no direct evidences, its existence in the Universe is highly motivated by many astrophysical and cosmological observations. If interactions between DM and SM particles exist, DM particles can be pair produced at LHC. Since WIMPs are weakly interacting a way to observe them at LHC is associated production with a visible SM particle. At the LHC these studies are sensitive to low DM masses ( $m\chi \leq 10$  GeV), thus giving an information complementary to direct DM searches, which are most sensitive to large DM masses. For the LHC Run-2 phase, simplified models are the paradigm adopted. Several Dark Matter benchmark models have been produced to maximise possibilities for early discovery of DM with the LHC data. As mediators of the spin-0 types are expected to have Yukawa-like couplings to the SM quarks, the final state of Emiss with heavy flavour quarks represents an important signature to probe at LHC. The  $b\bar{b} + \text{DM}$  final state is also interpreted in light of the bottom-Flavoured Dark Matter model (b-FDM). This model has been proposed for explaining the excess of gamma rays from the galactic centre, observed by the Fermi Gamma-ray Space Telescope. Latest results in the search for dark matter associated production with bottom quarks using the 2015 and 2016 LHC p p collisions data at centre-of-mass energy  $\sqrt{s} = 13$  TeV recorded by the ATLAS detector will be presented.

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