

Gravitational Physics and Astronomy 2022



Online Conference on Gravitational Physics and Astronomy

4-9 December 2022



<https://indico.cern.ch/e/GPA2022>



https://www.mdpi.com/journal/physics/special_issues/SPGPCC



Contribution ID: 41 Contribution code: **GPA22-14**

Type: **not specified**

Searches for Dark Matter and Extra Dimensions with the ATLAS Experiment at the LHC

Thursday 8 December 2022 09:30 (30 minutes)

The presence of a non-baryonic Dark Matter (DM) component in the Universe is inferred from the observation of its gravitational interaction. If Dark Matter interacts weakly with the Standard Model (SM) it could be produced at the LHC. On the other hand, the existence of extra spatial dimensions could provide solutions to longstanding issues with the SM, such as the hierarchy problem, and enable the search for massive gravitons and microscopic black holes in colliders. The ATLAS Collaboration has developed a broad search program for DM candidates in final states with large missing transverse momentum produced in association with other SM particles (light and heavy quarks, photons, Z and H bosons, as well as additional heavy scalar particles) and searches where the Higgs boson provides a portal to Dark Matter, leading to invisible Higgs decays. ATLAS also has an array of searches looking for massive gravitons in leptonic, hadronic, and bosonic final states. The results of recent searches on 13 TeV pp data from the LHC, their interplay and interpretation will be presented.

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