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Search for Dark Matter with the ATLAS detector at the LHC

Astronomical and cosmological observations support the existence of invisible matter that can only be detected through its gravitational effects, thus making it very difficult to study. Dark matter (DM) makes up about 27% of the known universe. As a matter of fact, one of the main goals of the physics program of the experiments at the Large Hadron Collider of the CERN laboratory is the search of new particles that can explain dark matter. This talk discusses both experimental and theoretical aspects of searches for DM candidates at the LHC as well as exploring the nature of possible interplay between the Standard Model and the Dark Sector. An updated overview of the various experimental search channels performed by the ATLAS experiment is presented in order to pinpoint complementarity among different types of LHC searches and the interplay between the LHC and direct and indirect dark matter searches.

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