

Search for Dark Matter Using the ATLAS Detector



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The Standard Model of particle physics is currently the theory that describes the most fundamental constituents of matter, together with the forces that govern their interactions. It however doesn't provide a complete picture of the fundamental structure of all the phenomena observed in physics. For example, it doesn't account for dark matter that, according to astrophysical observations, constitutes almost 25% of the total energy of the universe. In the last two decades, a lot of theoretical and experimental efforts have been devoted to the understanding of the nature of dark matter. It is certainly one of the missions of the Large Hadron Collider (LHC). The path to such a discovery is however a rugged terrain. After a quick overview of the motivation for dark matter searches at the LHC, this colloquium will present the challenges featured by such searches, as well as the techniques developed to overcome these challenges. A summary of the relevant data analysis results obtained by the ATLAS Collaboration will then be presented. Finally, the information concerning the nature of dark matter that can be extracted from these studies will be discussed.

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4:00—5:00 pm

OPS, Room 140