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Particle Physics at LPTHE

Vendredi 1 Fevrier 2019, 14 :00
LPTHE, Library
Domaines : hep-ph

Titre : *The 21-cm signal seen by EDGES*

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Résumé : *In March 2018 the EDGES experiment has reported the discovery of a 21-cm signal in absorption between redshift 20 and 15. This measurement, if confirmed, is fundamental for astrophysics because it can give us information about the epoch of reionization soon after the formation of first stars and galaxies. This talk is organised in three parts. In the first part I will present the EDGES experiment and the procedure the collaboration has used to extract the broad absorption profile from strong foreground of galactic synchrotron emission. Then I will review the physics of the 21-cm signal and the history of the InterGalactic Medium (IGM) properties assuming a LambdaCDM Universe. Finally, I will conclude with a simple application of this measurement to set bounds on the Dark Matter (DM) properties. In particular, annihilating DM particles produce significant heating of the IGM erasing the absorption feature measured by EDGES. These new limits on the annihilation cross section into standard model particles are comparable to the strongest ones from all other observables.*