

## **Bounds on Dark Matter Annihilations from 21-cm data**

*Tuesday, 18 December 2018 14:30 (1 hour)*

In March 2018 the EDGES experiment has reported, for the first time, the discovery of an absorption feature in the 21-cm spectrum at redshift around 17. This measurement, if confirmed, is fundamental because 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'll present the EDGES experiment and the procedure the collaboration has used to extract the small 21-cm signal from very large foreground of diffuse galactic synchrotron emission. Then I'll review the physics of the 21-cm line and the history of the InterGalactic Medium (IGM) properties assuming a LambdaCDM Universe. Finally, I'll 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 limits, derived for the first time in our paper, are very strong and, in some cases, the most stringent in the literature.

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