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## **(POS-4) Dark Matter Annihilation in 21cm Signal at Cosmic Dawn**

*Tuesday 20 June 2023 17:36 (2 minutes)*

Dark matter annihilation(DMA) provide an promising avenue to detect dark matter particles. Meanwhile, 21-cm line of hydrogen during cosmic dawn have great potential to reveal the information about the early galaxies and stellar formation process.

In this presentation, we elucidate the study using semi-analytic method to model the dark matter annihilation from global background and structure haloes at redshift  $\sim 20-40$ . Our findings reveal that dark matter annihilation inhibits gas collapse in mini halos. By considering other possible effects such as streaming velocity and feedback mechanism. We obtain a more comprehensive result and we subsequently compare with previous results.

Our result suggest that DMA has the ability to significantly alter the observable brightness temperature of 21-cm hydrogen line, and may even affect the early universe's star formation history. This work sheds light on the importance of taking into account the impact of DMA when interpreting the 21cm signal.

### **Keyword-1**

Dark matter annihilation

### **Keyword-2**

21-cm signal

### **Keyword-3**

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