## 10th International Conference on Gravitation and Cosmology: New Horizons and Singularities in Gravity (ICGC 2023)



Contribution ID: 132

Type: Oral

## Effects of Z3 symmetric dark matter models on global 21-cm signal

 $\mathbb{Z}_3$  symmetric dark matter models have demonstrated remarkable potential in addressing various (astro-)particle physics challenges. In this presentation, I will discuss the diverse ways in which this model can successfully explain the different cosmological observations. We have considered two such promising models: semi-annihilating dark matter (SADM) and Co-SIMP  $2 \rightarrow 3$  interaction, and investigated their effects on the global 21-cm signal. We found that SADM model has a lesser impact on explaining the EDGES dip, while the Co-SIMP model can successfully explain the absorption dip measured by EDGES experiment by virtue of it's intrinsic cooling effect. Additionally, given the ongoing debate between EDGES and SARAS 3 experiments regarding the global 21-cm signal, we demonstrate that our chosen models can still remain viable in this context, even if the EDGES data requires reassessment in future. Furthermore, we have explored the impacts of these models during the Dark Ages and conducted a consistency check with CMB and BAO observations using the Planck 2018(+BAO) datasets.

This talk is based on our recent work: arXiv:2308.04955 .

## Email

debarun31paul@gmail.com

## Affiliation

Indian Statistical Institute, Kolkata

Author: PAUL, Debarun (Indian Statistical Institute, Kolkata)Presenter: PAUL, Debarun (Indian Statistical Institute, Kolkata)

Session Classification: Cosmology

Track Classification: Cosmology