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21-cm observations and warm dark matter models

The recent report of 21-cm absorption signal by EDGES experiment has raised considerable interest in the dark matter (DM) community. Taking the reported EDGES result at face value, a number of forthcoming papers constrained masses of DM particles and their interaction strengths with Standard Model particles.

However, the connection between the formation of structures and 21-cm EDGES signal requires knowledge of parameters that describe star formation and radiation production during the Dark Ages.

We demonstrate that it is impossible to robustly constrain the dark matter model using only the EDGES signal. In particular, we show that resonantly produced 7keV sterile neutrino dark matter model is consistent with recent 21-cm EDGES measurements.

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