

Dark-matter searches with 21-cm

Tuesday, 13 July 2021 17:30 (15 minutes)

I will describe how to use the 21-cm line of hydrogen to learn about the nature of dark matter in the early universe. I will begin with an overview of the 21-cm signal during cosmic dawn and reionization, and give a brief update of the 2021 status of both theory and measurements. Then, I will show how to use the depth of the signal as a thermometer to learn about anomalous cooling or heating due to dark-matter interactions. Finally, I will illustrate how the timing of this signal can be used to study dark matter at smaller scales than currently accessible. This will determine whether dark matter is cold, warm, or self interacting, and settle whether there is a small-scale CDM problem.

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No

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