

# Phenomenology 2020 Symposium



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## Constraining atomic dark matter with white dwarfs

*Tuesday 5 May 2020 15:00 (15 minutes)*

Dark matter, or a subcomponent of dark matter, could be in the form of dark atoms bound together by a dark  $U(1)$ . Such objects are predicted in well-motivated models, including Mirror Twin Higgs, and are a good benchmark for general dissipative dark matter models. In this talk I will describe a new way of constraining the abundance of atomic dark matter using white dwarf cooling. If atomic dark matter exists, it will accumulate in the cores of stars and radiate energy away from the stellar interior as dark radiation. This can dramatically affect the cooling rate of white dwarfs. We are able to derive constraints across a wide range of masses and probe extremely small values of the kinetic mixing parameter.

### Summary

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