## Phenomenology 2018 Symposium



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## **Dynamical Dark Matter from Thermal Freeze-Out**

Tuesday 8 May 2018 16:30 (15 minutes)

In the Dynamical Dark Matter (DDM) framework, the dark sector comprises a large number of constituent particles whose individual masses, lifetimes, and cosmological abundances scale with respect to each other in specific ways. Thus far, DDM model-building has primarily relied on non-thermal mechanisms for abundance generation such as misalignment production, since these mechanisms give rise to appropriate scaling relations between these quantities. In this talk, I will show that an appropriate set of scaling relations for DDM can also arise from thermal freeze-out. Moreover, I shall show that a far broader range of viable scaling relations between dark-matter lifetimes, abundances, and masses can be achieved in thermal DDM scenarios than in the non-thermal scenarios for DDM that have previously been considered. Thus, the extension of the DDM framework into the thermal domain opens up a rich array of new phenomenological possibilities for DDM mdash; possibilities that can be readily probed by canonical detection methods for MeV- to TeV-scale dark-matter candidates.

## Summary

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