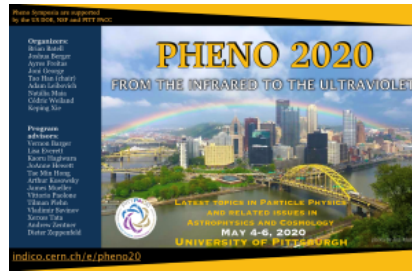


Phenomenology 2020 Symposium



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Deciphering the Structure of the Dark Sector from the Matter Power Spectrum: A Concrete Example

Monday 4 May 2020 17:15 (15 minutes)

Particle-physics processes within the dark sector could leave imprints on the dark-matter phase-space distribution, and therefore influence the way in which structure forms in the early universe. In a recent paper [arXiv:2001.02193], we proposed a procedure for reconstructing the dark-matter phase-space distribution from the shape of the matter power spectrum. In this talk, we demonstrate how this reconstruction procedure works in practice by applying it in the context of an illustrative example model in which a variety of non-trivial and even multi-modal dark-matter phase-space distributions can arise from decays within a non-minimal dark-sector. We examine the relationship between the decay dynamics and the shape of the transfer function and demonstrate that indeed our reconstruction procedure allows us to reconstruct the salient features of the dark-matter phase-space distribution.

Summary

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