Phenomenology 2021 Symposium



Contribution ID: 1367

Type: DM

Spin-2 mediated Dark Matter in Warped Extra-Dimensions

Tuesday 25 May 2021 14:30 (15 minutes)

We present a study of spin-2 mediated scalar dark matter. As a blueprint, we work in a warped extradimensional model such that the mediator(s) are the massive spin-2 Kaluza-Klein (KK) modes of the 5D graviton. On top of Standard Model particles, we focus on dark matter annihilations into KK-gravitons. Due to the longitudinal modes of the massive gravitons, any truncation of the KK-tower leads to a tremendous growth of the amplitude at large center of mass energies \sqrt{s} , which heavily impacts any phenomenological analysis. For the first time, we include the full KK-tower in this dark matter production process and find that this growth is unphysical and cancels once the full field content of the extra-dimensional theory is taken into account. Interestingly, this implies that it is not possible to approximate the results obtained in the full theory with a reduced set of effective interactions once \sqrt{s} is greater than the lightest massive graviton. This casts some doubt on the universal applicability of previous studies with spin-2 mediators within an EFT framework and prompts us to revisit the phenomenological allowed parameter space.

Summary

Author: DE GIORGI, Arturo (Max Planck Institute for Physics)
Co-author: VOGL, Stefan (Freiburg University)
Presenter: DE GIORGI, Arturo (Max Planck Institute for Physics)
Session Classification: DM III