

A TeV scale messenger (e.g. 750 GeV) of Dark Matter

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Standard Model and Dark sector can be related via a (pseudo)scalar mediator particle, ‘messenger’. The scenario belongs to a wider class of ‘simplified models’ of DM. One can think the models expand the pure effective operator interactions including the degrees of freedom of a mediator particle. We will present some physical scenarios having a TeV scale messenger (for example, 750 GeV). We show the scenario with a rather light DM candidate can satisfy all the LHC and cosmic constraints including the abundance of DM. Having a slight tension with the LHC mono-jet constraint, a light DM particle can explain the Galactic gamma-ray excess at 1-5 GeV. However, extending our study to more complete model building, the TeV messenger seems to point a heavier DM particle in the TeV scale. We will provide some concrete examples. The talk is based on the results of arXiv:1603.07263 and arXiv:1602.00004.

Summary

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