

Large loop-coupling enhancement of a 750 GeV pseudoscalar from a light dark sector

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Summary

In this talk I will first show how the relatively large effective couplings required by the 750 GeV diphoton signal are the result of a threshold enhancement in the loop coupling between a heavy pseudoscalar particle and new leptons and quarks with masses of about 375 and 700 GeV, respectively. I will then present a model in which the new charged leptons avoid detection by decaying to a natural dark matter candidate, and demonstrate that such model is able to fit the observed diphoton signal while satisfying the experimental bounds on the other decay channels and retaining perturbativity up to scales as high as $10^9 GeV$. Finally, I will show that the dark matter experimental bounds are satisfied in the same parameter space region viable at LHC.

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