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Connecting multi-lepton anomalies at the LHC and Astrophysical observations

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The connection between the multi-lepton anomalies at the Large Hadron Collider and astrophysics can be described by a two Higgs doublet model with an additional singlet scalar (2HDM+S). We make studies on the interaction mechanism of singlet S to dark matter. This is achieved from the annihilation of Dark Matter (DM). We demonstrate that using this model we could also describe the excesses in gamma-ray flux from the galactic centre and the cosmic-ray spectra from AMS-02. Moreover, this study provides indirect searches for new bosons that have never been performed before at the LHC, namely the search for H⟶SS,S⟶invisible and S decaying into other particles.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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