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Probing Dark Matter in the Madala Model using MeerKAT

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The Madala model was introduced to explain several anomalies observed at the Large Hadron Collider. This model introduces a dark matter candidate through the extension of the standard model's Higgs-sector, i.e. heavier scalar bosons are introduced, which can couple to dark matter. The cosmic ray spectra and galactic centre's gamma-ray flux excesses have been observed in the AMS-02 and Fermi-LAT experiments, respectively. Assuming the Madala model can explain these excesses, the aim is to make synchrotron emission predictions for MeerKAT observations. The region of interest for the predictions is the nearby satellite Reticulum II. The MeerKAT predictions will instigate the validation of our assumption and otherwise allow us to constrain the particle properties of the Madala model from an astrophysical standpoint. In essence we are able to describe the multi-lepton anomalies at the LHC and the anomalies in astrophysics simultaneously.

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

Yes

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

MSc

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