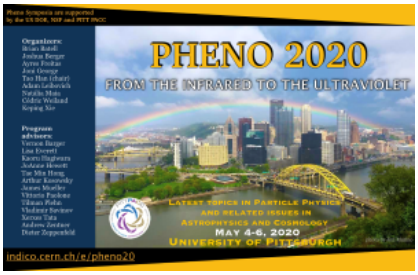

Contribution ID: **980** Type: **Parallel Talk**

Constraints on the Inert(1+2)HDM

Monday 4 May 2020 17:30 (15 minutes)

We study a three Higgs doublet model where one doublet is inert and the other two doublets are active. Flavor changing neutral currents are avoided at tree-level by imposing a softly broken $_2$ symmetry and we consider type I and type II Yukawa structures. The lightest inert scalar is a viable Dark Matter (DM) candidate. A numerical scan of the free parameters is performed taking into account theoretical constraints such as positivity of the scalar potential and unitarity of $2 \longrightarrow 2$ scattering amplitudes. The model is further constrained by experimental results such as B physics lower limits on charged Higgs masses, Electroweak Precision Observables, LEP II, LHC Higgs measurements, Planck measurement of the DM relic abundance and WIMP direct searches by the LUX and XENON1T experiments. The model predictions for mono-jet, mono Z and mono Higgs final states are studied and tested against current LHC data and we find the model to be allowed. We also discuss the effects of abandoning the "dark democracy"assumption common in studies of inert models. Projected sensitivities of direct detection experiments will leave only a tiny window in the DM mass versus coupling plane that is compliant with relic density bounds

Summary

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Presenter: MERCHAND, Marco

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