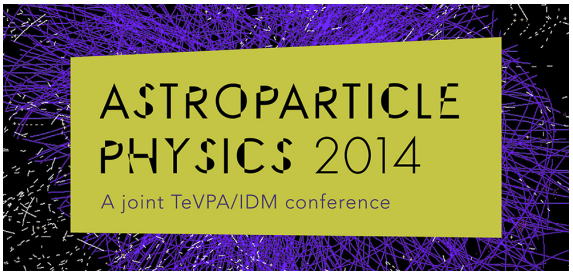

Contribution ID: **15** Type: **Presentation**

Minimal Simplified Models for the Galactic Center Gamma-Ray Excess

Monday, June 23, 2014 3:45 PM (15 minutes)

We are interested in exhausting the list of possible minimal models that could produce the galactic center gamma-ray excess at tree level, without adopting the simplifications inherent in the effective operator approach. We wish to take a holistic but general view of the types of interactions that could produce the galactic center gamma-ray excess. This leads us to the simplified model formalism: we write down all possible combinations of renormalizable dimension-four operators and super-renormalizable dimension-three operators compatible with Lorentz invariance that, in combination, can lead to dark matter annihilation to Standard Model fermions. Interactions of this sort will necessarily mediate direct scattering and production diagrams. We are interested in understanding how generically we can decouple the strength of these effects for the purpose of verifying that the galactic center excess can be mediated by tree-level diagrams without being in tension with null direct detection and direct production searches.

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