Seminar

Resummed gamma-ray spectrum from electroweakly interacting spin-1 dark matter

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Abstract：Electroweakly interacting stable spin-1 particle with $\mathcal{O}(1--10)$ TeV mass can be a dark matter candidate with rich testability. We calculated a gamma-ray energy spectrum where large Sudakov log corrections are resummed at the NLL accuracy. We explicitly proved that the energy spectra have universal shape around DM mass for all the DM spins at this accuracy. Resummation allows us to reduce the uncertainty, demonstrated in the energy spectrum with distinctive two peaks from $\gamma\gamma$, $Z\gamma$ channel, and a photon with Z_2-even extra heavy neutral boson Z'. We discuss the prospect to improve accuracy further, which is crucial for the heavier DM mass region and realistic resolution in future gamma-ray observations.

Februry 27th (Thu) 10:00 4th building 4th floor

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