



Contribution ID: 22

Type: **not specified**

Self-consistent velocity distributions for WIMPs explaining the Galactic Centre GeV excess

Monday 21 September 2015 17:35 (30 minutes)

Complementarity in the search for Dark Matter (DM) is realised when, for example, you use indirect detection gamma-ray data to infer information on the expected event rate in a direct detection experiment. However, one should take care of adopting the same assumptions when combining different detection strategies. I will assume that the excess measured by Fermi-LAT from the Galactic Centre is due to DM and I will use the information on its morphology to infer the DM distribution in the inner Galaxy. This will be combined with other kinematics information at larger distances to generate a mass model of the Milky Way that is compatible with the Galactic Centre excess. The velocity distribution consistently determined from this mass model is what should be used to predict the expected recoil rate. I will show the impact of such a consistent modelling of the DM halo in the determination of the upper limits from LUX.

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Session Classification: Indirect Detection