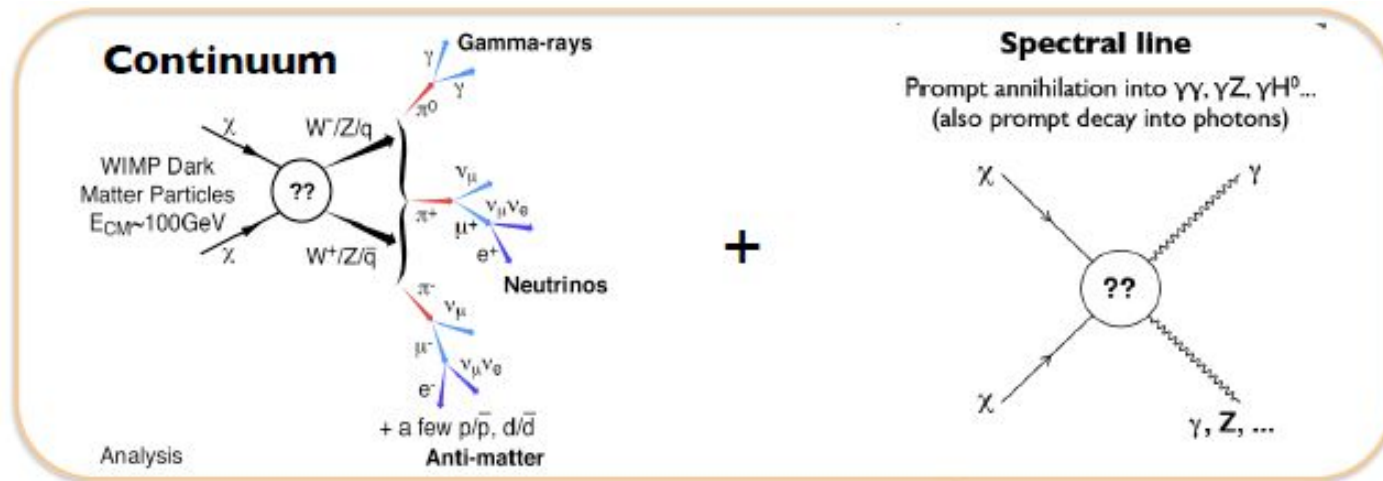# Search for Dark Matter Signal from Galaxy Clusters

Liang Yunfeng

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Purple Mountain Observatory
Key Laboratory of Dark Matter & Space Astronomy
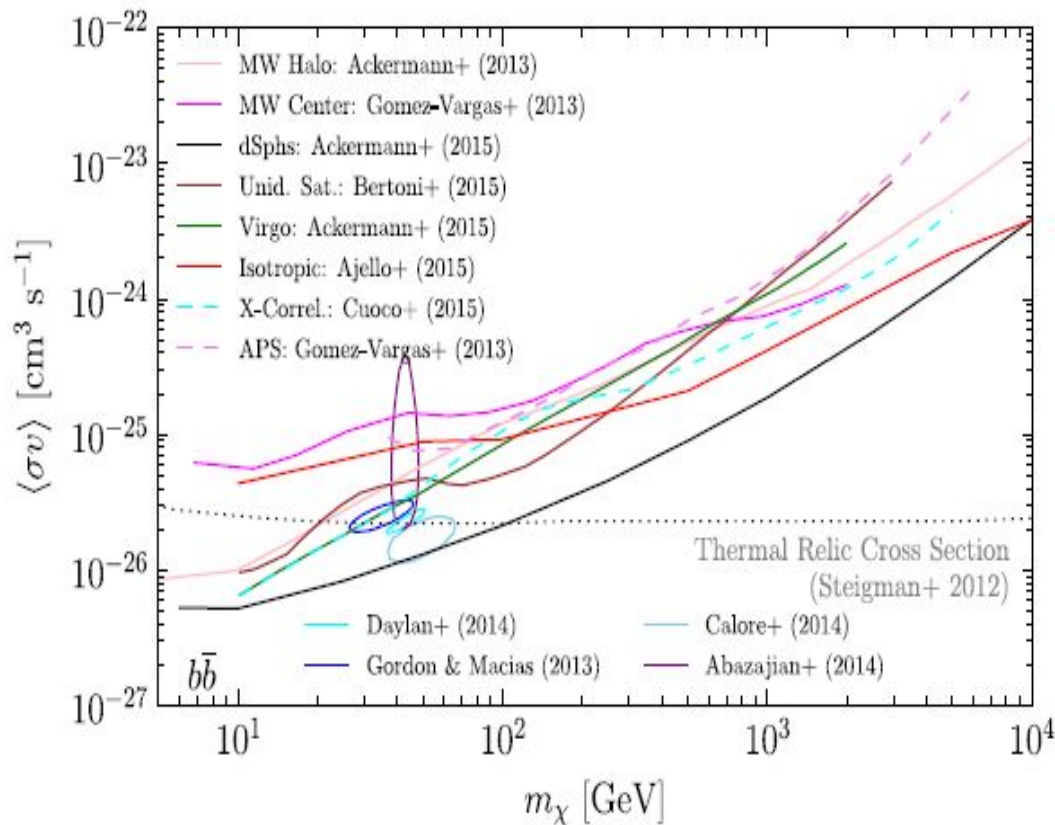
Dark Matter Indirect Detection

Gamma-ray Flux

Particle Physics

$$\frac{d\Phi_\gamma}{dE_\gamma}(E_\gamma, \phi, \theta) = \frac{1}{4\pi} \frac{<\sigma_{ann}v>}{2m_{WIMP}^2} \sum_f \frac{dN_\gamma^f}{dE_\gamma} B_f$$

$$\times \int_{\Delta\Omega(\phi,\theta)} d\Omega' \int_{los} \rho^2(r(l,\phi'))dl(r,\phi')$$

DM Distribution (J-Factor)
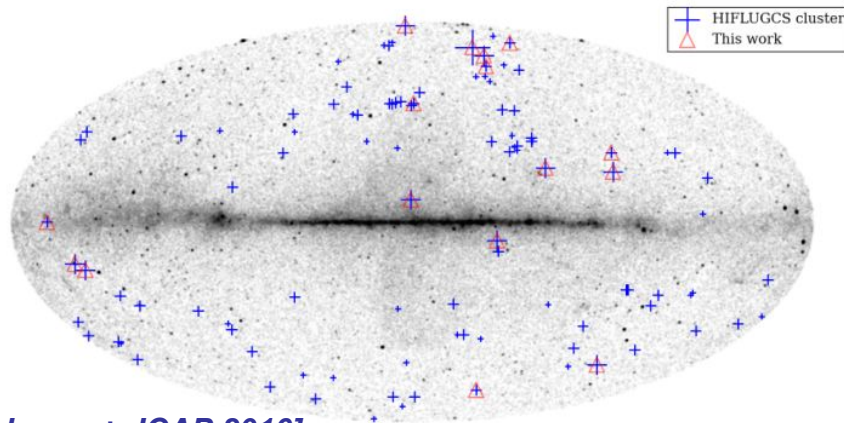
Dark Matter Indirect Detection
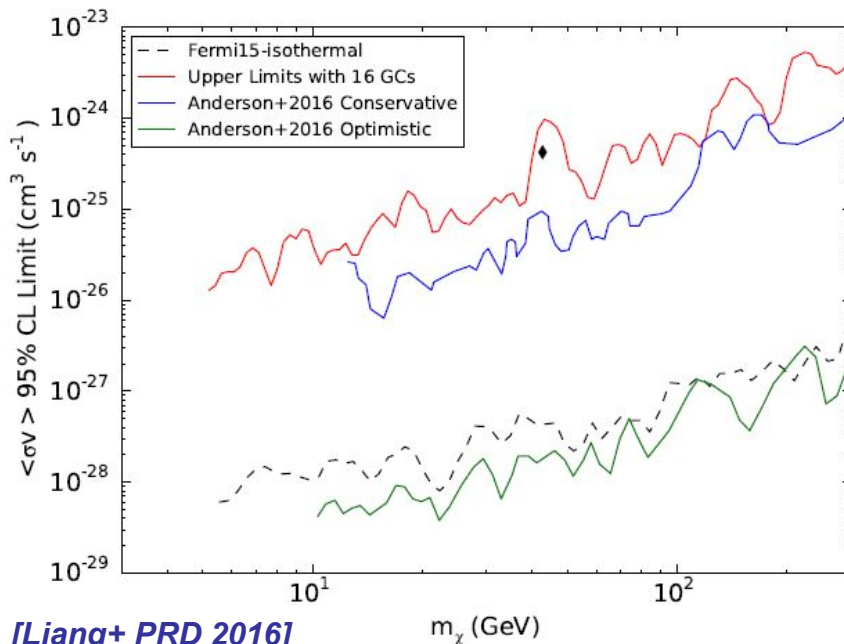

DM search targets:

• Galactic Center

• Milky Way Halo

• Galaxy Clusters

• Dwarf Satellites

• Isotropic Backgroud

• and so on

[Charles+ PhysRep 2016]

Search for a gamma-ray line feature from a group of nearby Galaxy clusters with Fermi LAT Pass 8 data

HIFLUGCS cluster
This work

[anderson+ JCAP 2016]

[Liang+ PRD 2016]

- search for line-like signals from 16 nearby galaxy clusters

- stacking analysis method is used

- improvements may be due to Pass 8 data and stacking method we used

- there is a weak excess around 43 GeV

- more details can be found in Liang+ PRD 2016 (arXiv:1602.06527)

Thanks for your attention!