

Velocity dependence of dark matter annihilation for indirect detection

Chao Zhang (PHD student)
Supervisor: Prof.Dr. Dieter Horns

14th Patras Workshop on Axions, WIMPs and WISPs, DESY, 2018



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG



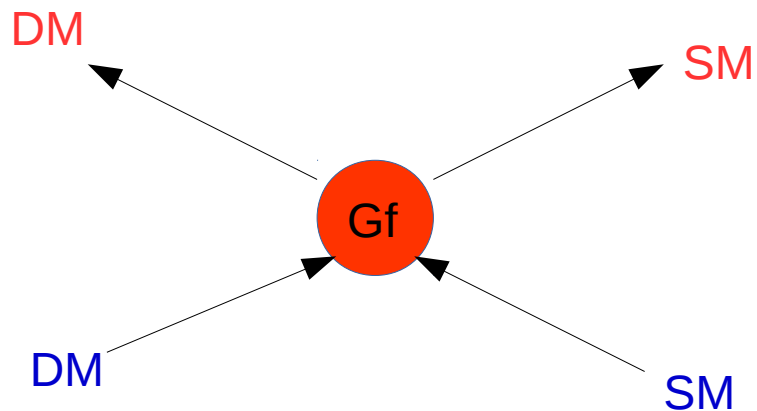
Collaborative Research Centre 676
Particles, Strings, and
the Early Universe
The Structure of Matter and Space-Time



Deutsche
Forschungsgemeinschaft

DFG

Particle physics



$$\sigma v_{ann} = a + bv^2 + cv^4$$

s
 p
 d wave

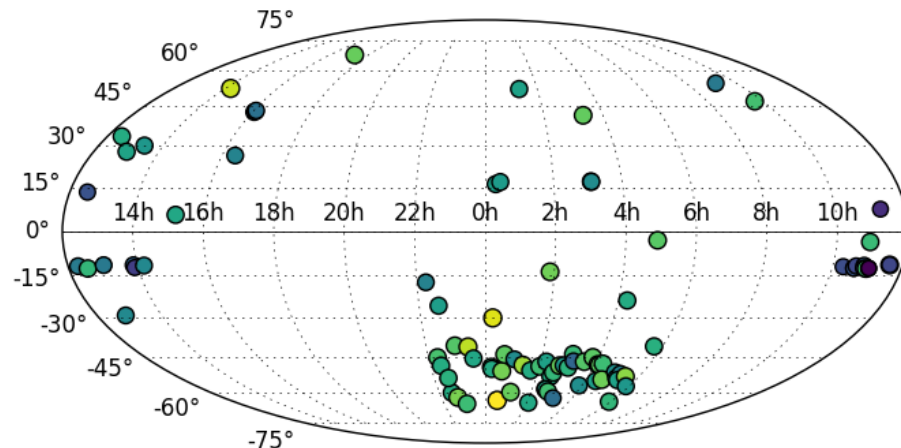
$$\langle \sigma v \rangle_{ann} = 2.7 \cdot 10^{-26} \text{ km}^3 \text{ s}^{-1}$$

$$\Omega_\chi h^2 = 0.1198 \pm 0.0015$$

PLANCK
arXiv:1507.02704

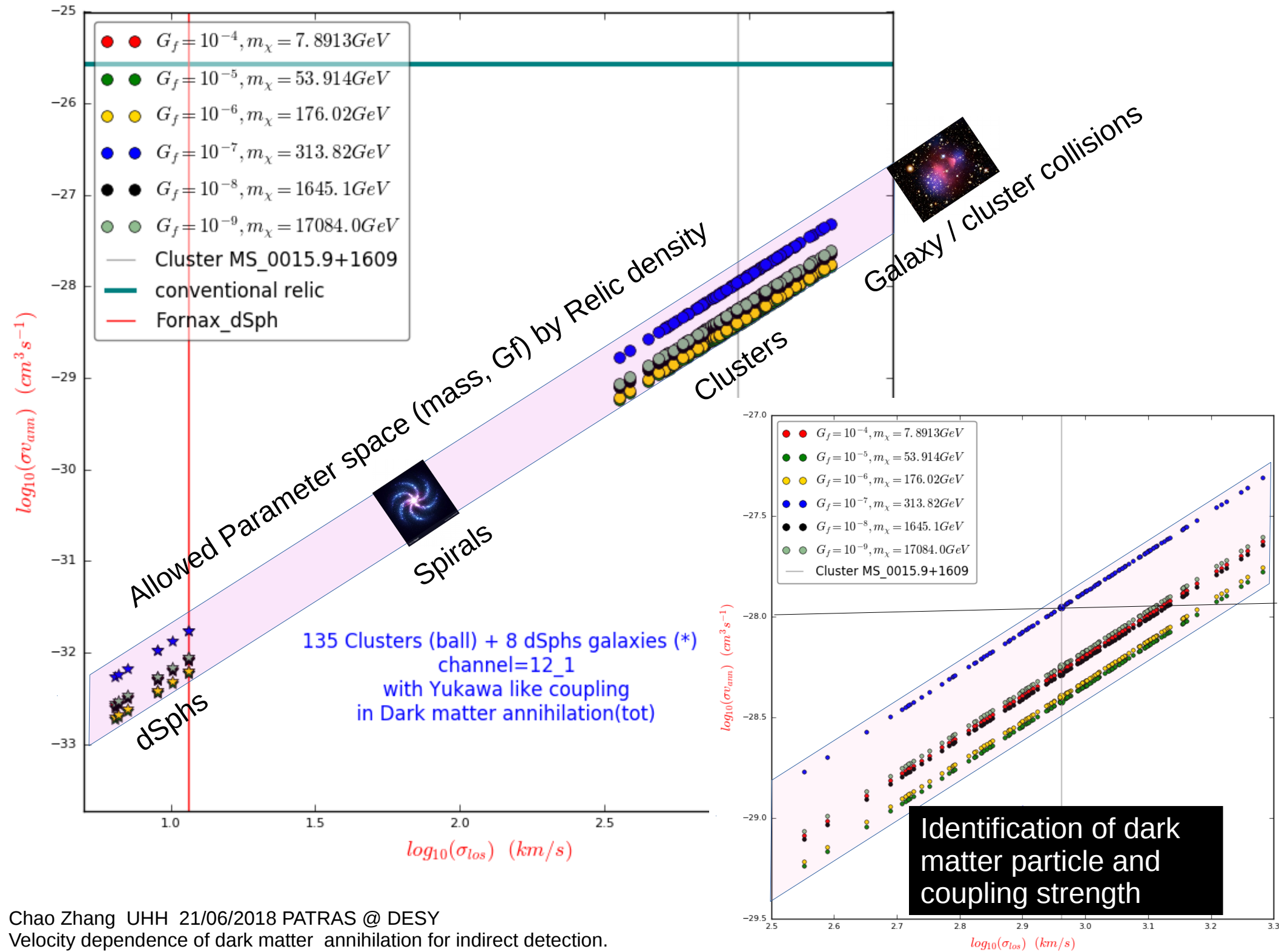
$$\langle \sigma v \rangle_{Today} = ?$$

Astrophysics



J-factor

Anisotropy model
Density profile
Velocity dispersion
Luminosity
...



Velocity suppressed annihilation.

→ New particle identification method.

→ Sommerfeld enhancement.

→ Foreground effect.

→

→ For more, please join me in the poster session for discussion if you are interested.

Thank you very much!