The Cosmic Abundance of Molecular Hydrogen

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Introduction

This is the introduction. Keres et al. (2003)

COLD GASS Results

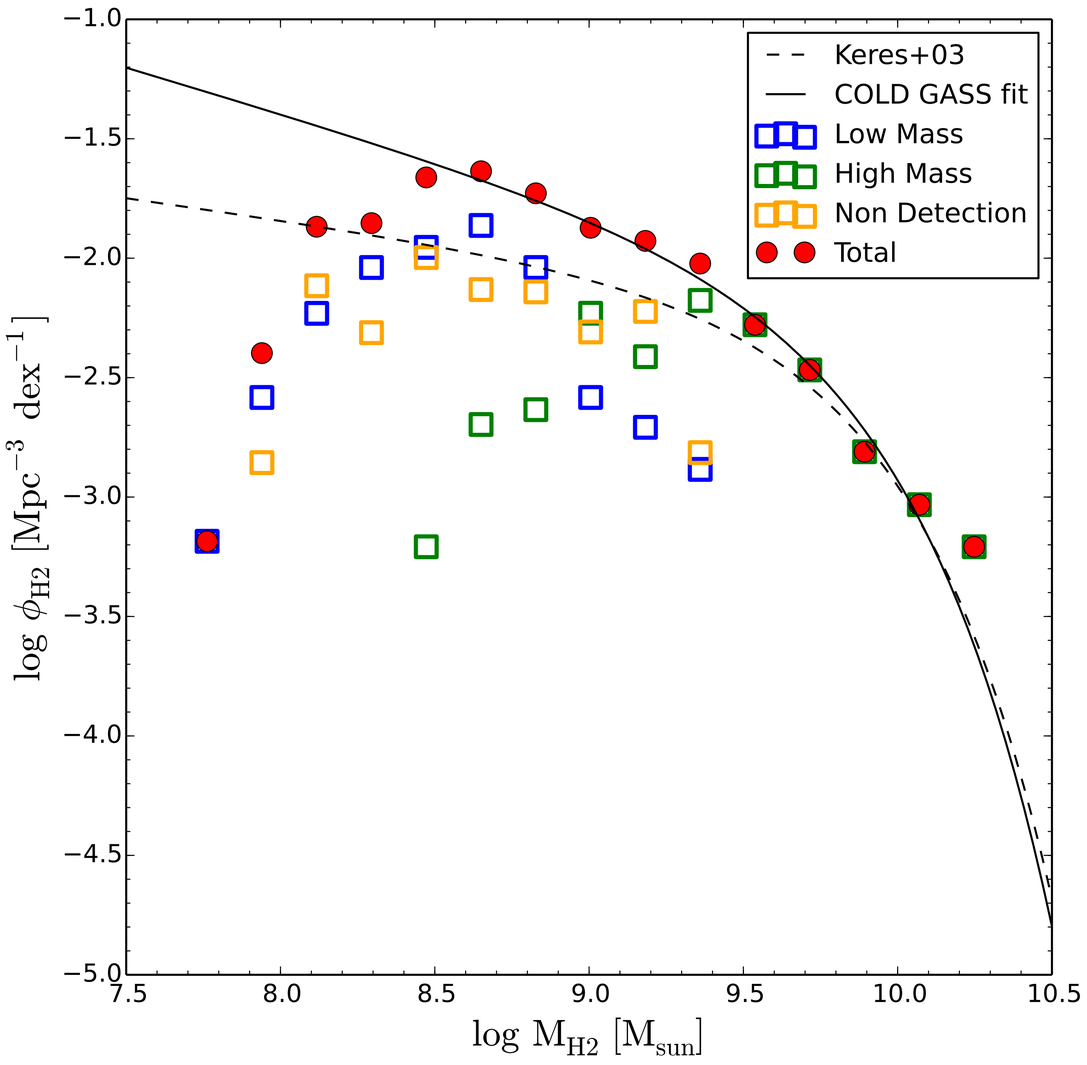

Figure 1 : Molecular gas mass function ($\mathrm{M_{H2}}$). The blue, green and orange squares represent the low mass, high mass and non-detections from the COLD GASS survey and the red circles how the total contribution from all galaxies in the survey. The dashed line is the best fit from Keres et al. (2003) and the solid line is the best fit to the COLD GASS data.

$$\Omega_{\mathrm{H2}} = 3.1 \cdot 10^{7}\ \mathrm{M_{\odot}\ Mpc^{-3}} \quad (1)$$

Conclusions

Methods

Scaling Relations

The second method makes use of tight scaling relations in the $\mathrm{M_{*}} - \mathrm{SFR}$ plane

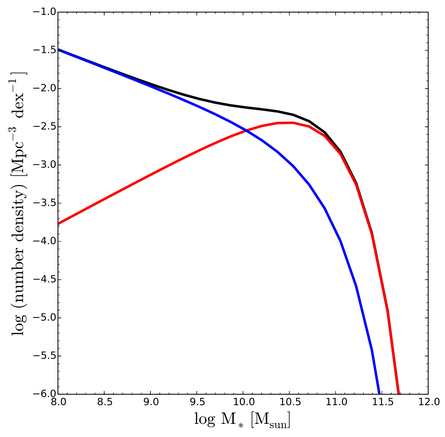

Figure 2 : Baldry et al. (2012)

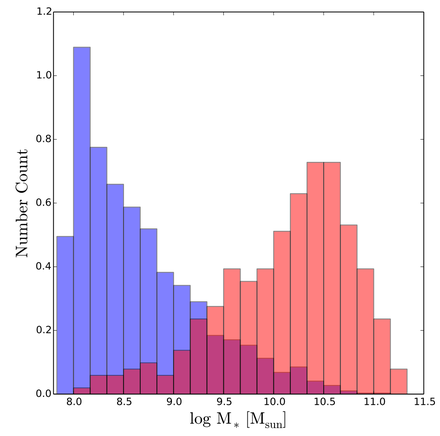

Figure 3 :

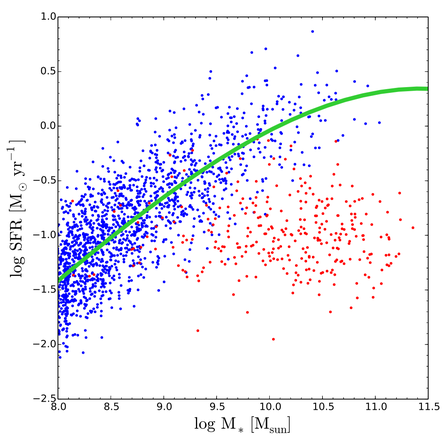

Figure 4 : Saintonge et al. (2016)

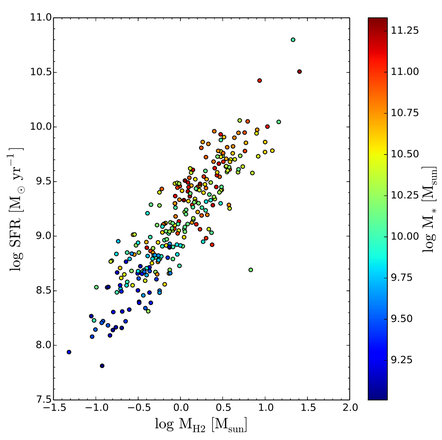

Figure 5 :

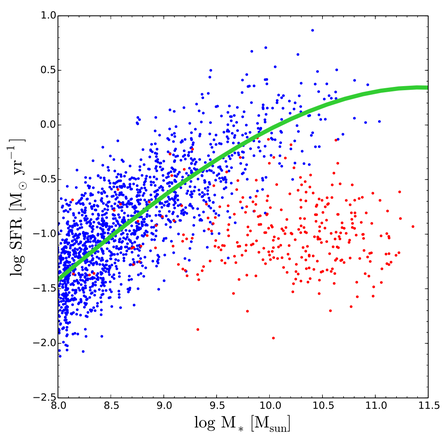

Figure 6 : Saintonge et al. (2016)

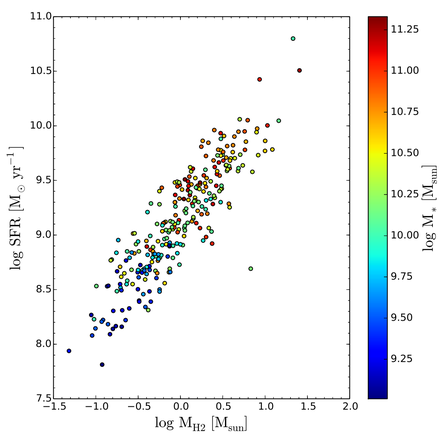

Figure 7 :

References

Baldry, I., Driver, S. P., Loveday, J., Taylor, E., Kelvin, L., Liske, J., Norberg, P., Robotham, A., Brough, S., Hopkins, A. M. et al. (2012), 'Galaxy and mass assembly (gama): the galaxy stellar mass function at $z < 0.06$', *Monthly Notices of the Royal Astronomical Society* **421**(1), 621–634.

Keres, D., Yun, M. S. & Young, J. (2003), 'CO luminosity functions for far-infrared-and B-band-selected galaxies and the first estimate for $\Omega_{\mathrm{HI+H2}}$', *The Astrophysical Journal* **582**(2), 659.

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