

The Resolved Kennicutt-Schmidt Law in Nearby Galaxies

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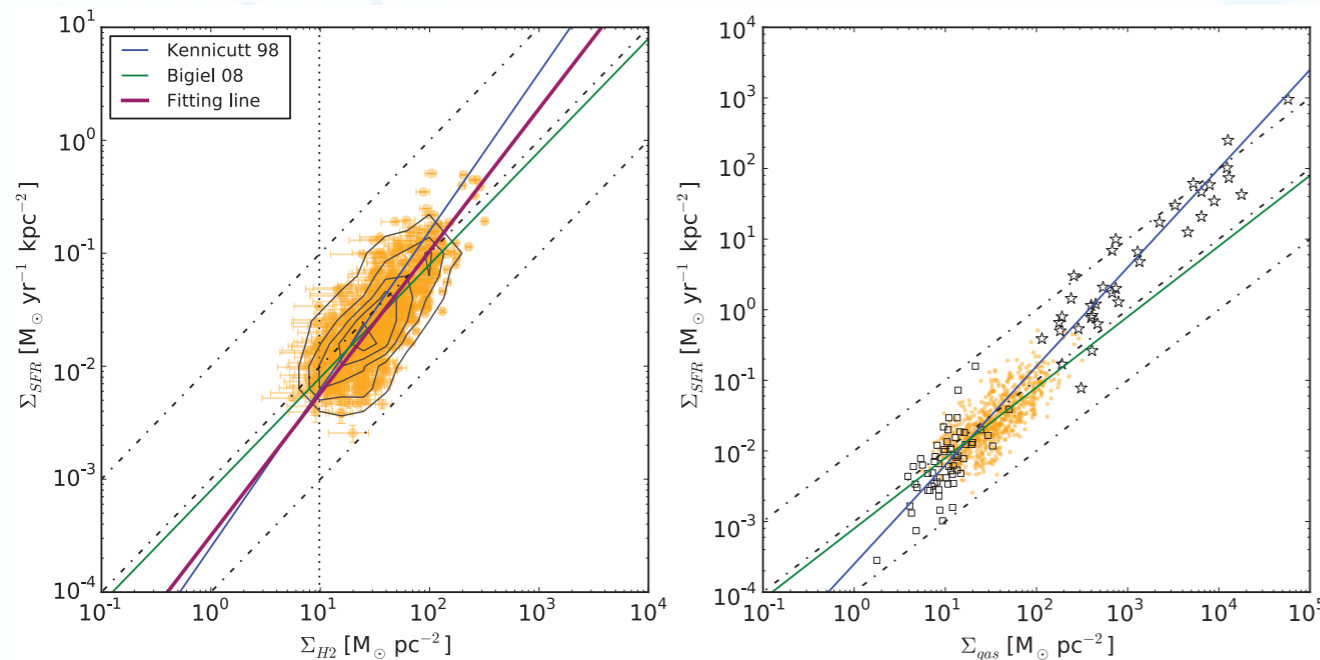
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Abstract

The Kennicutt-Schmidt law (Schmidt 1959; Kennicutt 1998, hereafter K-S law) is a power law correlation between area averaged star formation rate and gas surface density. Despite its importance, the physics that underlie

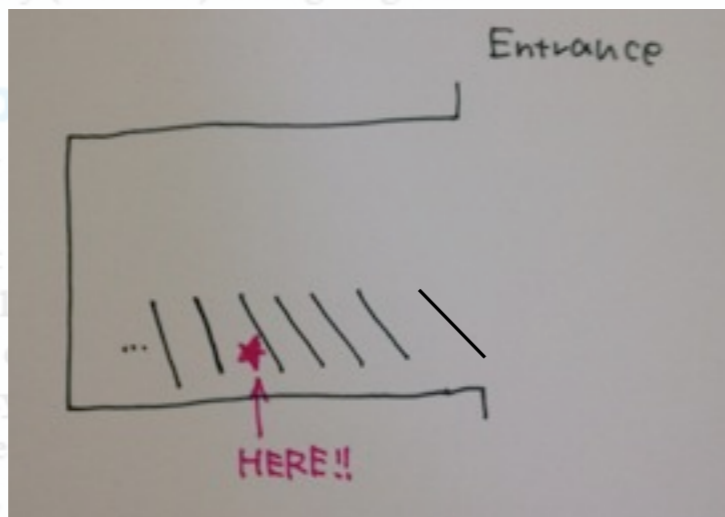


- Studying the K-S law
 - at 750/500 pc scale
 - using CO(J=1-0)
 - also examined DIG subtractions

- Obtained super-linear slope (N = 1.3-1.8)
- Discussing
 - the difference to previous studies
 - star formation process

The K-S Law

We derive the K-S law procedure as B08, but with super-linear correlation with: $\log(\Sigma_{SFR}) = -3.5 \pm 0.04 + (1.2 \pm 0.05) \times \log(\Sigma_{H2})$ where Σ_{SFR} is the surface molecular gas surface density. Kennicutt (1998a,b)' s (here Figure 1 right). In the plot, entire galactic disks to the lower end of nuclear starburst.



The K-S Law on 500 pc Scale

We verify the K-S law on 500 pc scale (Figure 2). DIG subtraction is also examined on this scale as an example. The best fit linear regressions are: +DIG | $\log(\Sigma_{SFR}) = -3.5 \pm 0.08 + (1.2 \pm 0.05) \times \log(\Sigma_{H2})$.