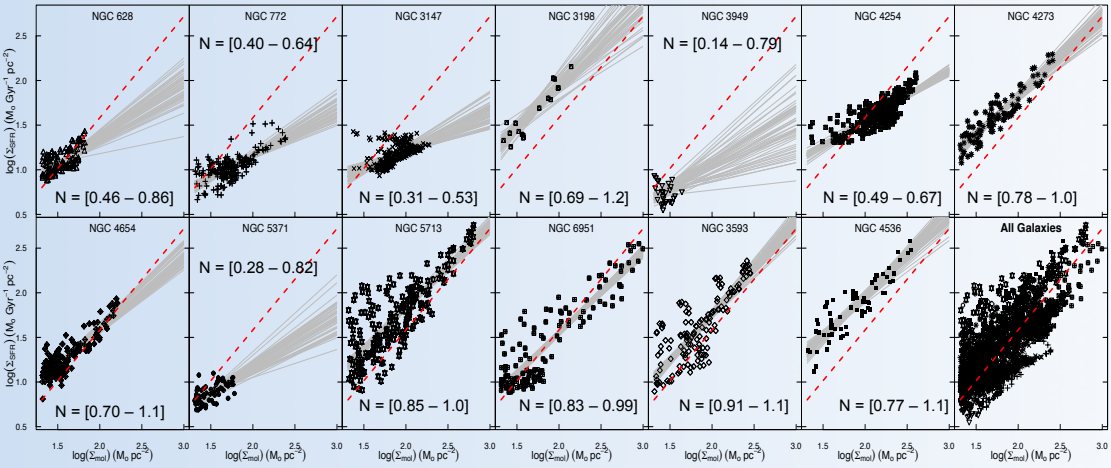
The sub-linear and non-universal Kennicutt-Schmidt Relationship

R. Shetty, B. Kelly, N. Rahman, F. Bigiel,
A. Bolatto, P. Clark, R. Klessen, L. Konstandin

Fitting the Kennicutt-Schmidt (KS) Law:
$\log\Sigma_{SFR}=A+N\log\Sigma_{mol}$

Hierarchical Bayesian modeling rigorously treat uncertainties, and estimates *individual* and *population* parameters

Applied to sample from HERACLES & STING surveys:

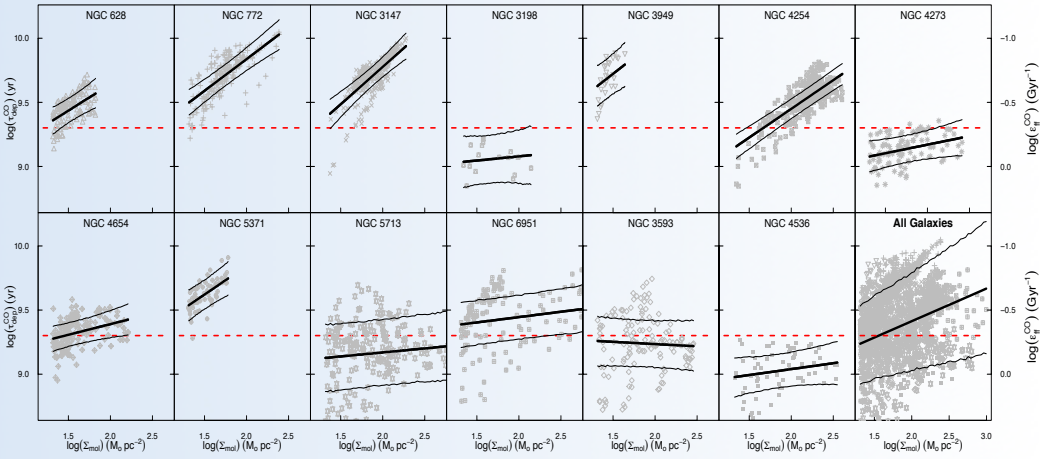


STING Population:
Mean N: 0.76
95%: [0.6,0.9]

⇓

Non-Universal KS Law

Sub-linear KS law indicates increasing depletion time with Σ_{mol}



ARI ITA LSW

References:
Shetty et al. 2013, MNRAS 430, 288
Shetty et al. 2013, arXiv 1306:2951

SFB 881