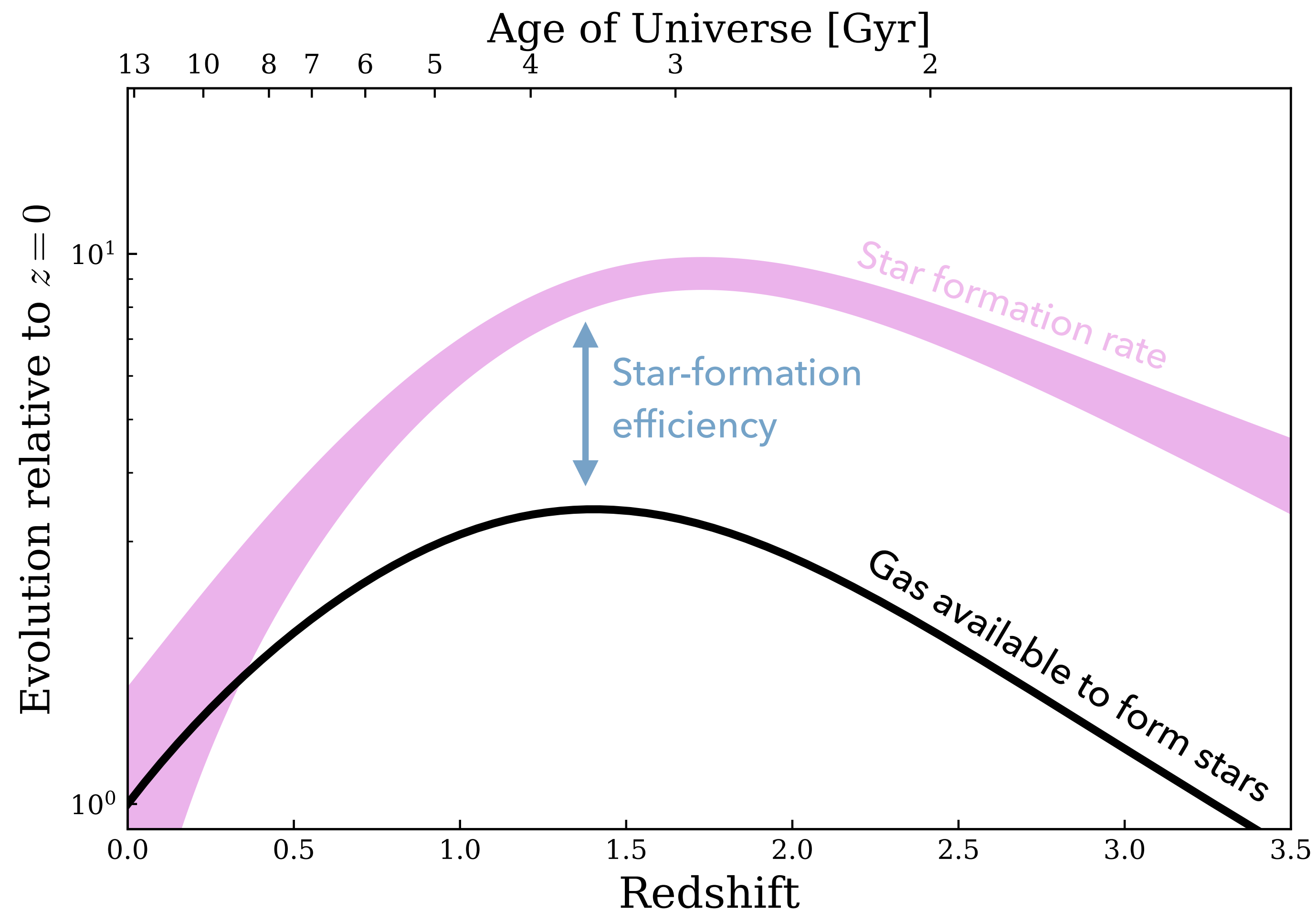


Dr. Jed McKinney  
Postdoc, UT Austin



# FAR-IR LINE FOLLOW-UP TO MEASURE GAS AND DUST CONDITIONS IN DISTANT GALAXIES

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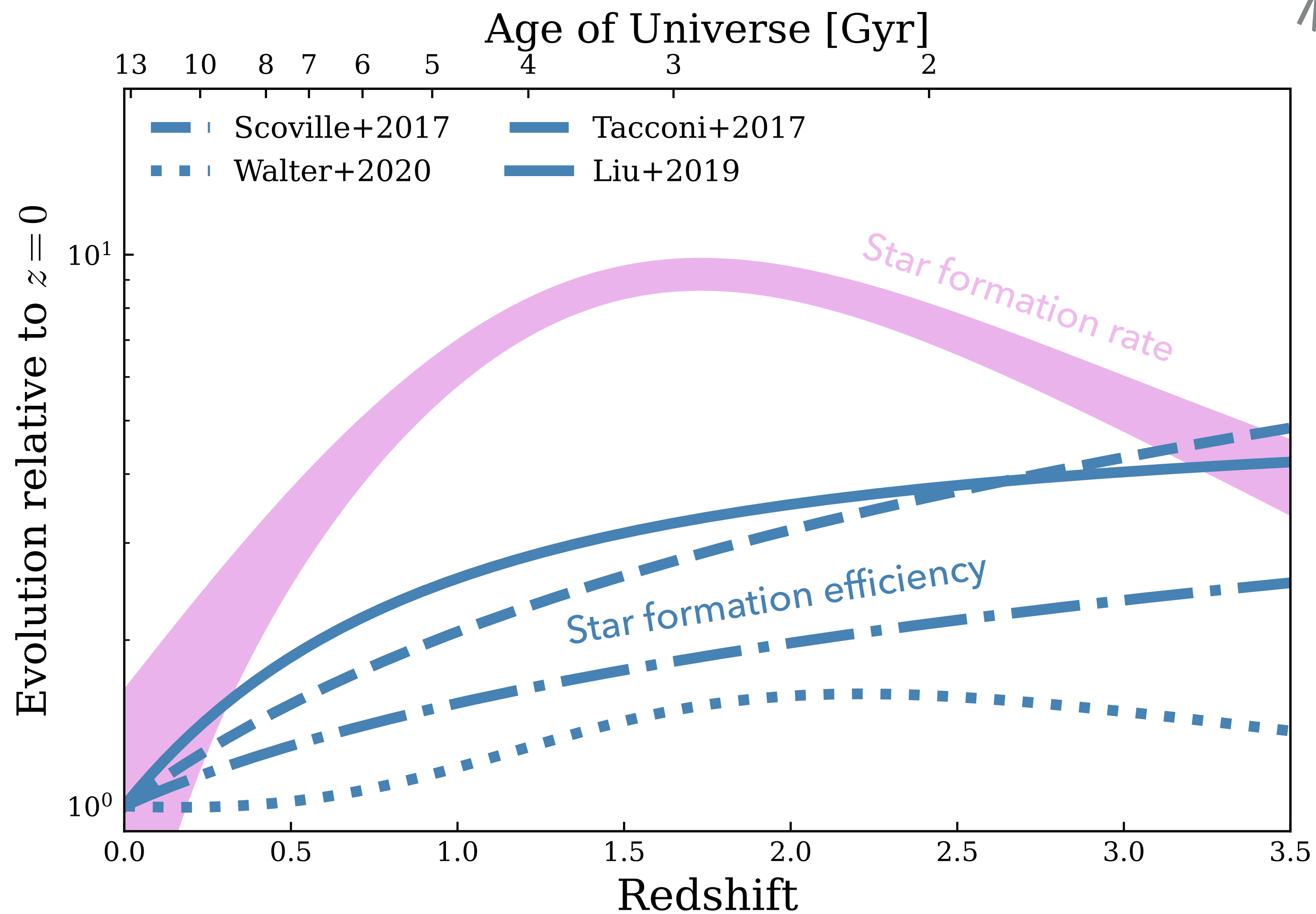


"Star-formation Efficiency"  
 $\frac{\text{Formation rate of stars}}{\text{Gas available to form stars}}$

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GMC efficiencies

Mergers

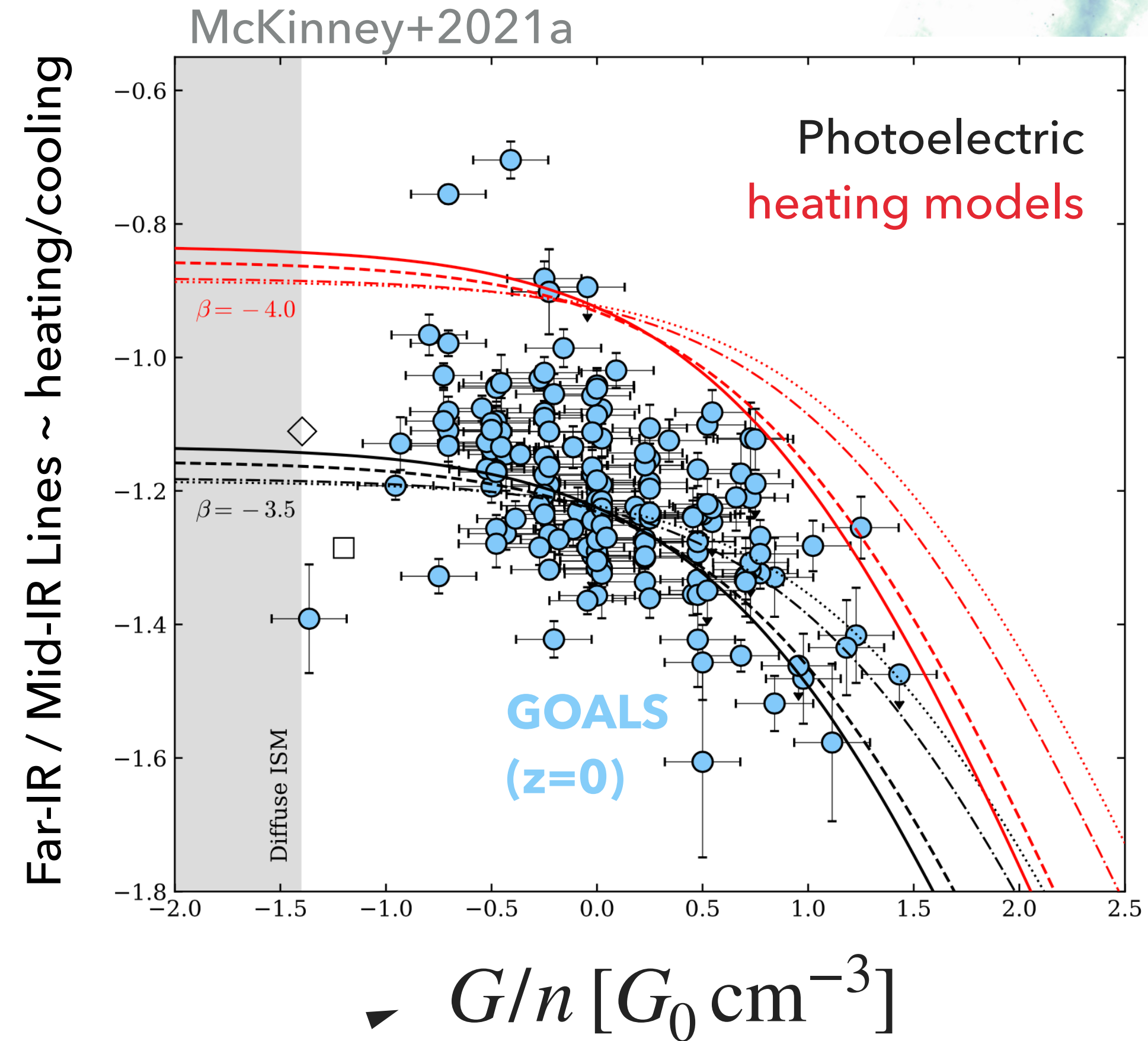
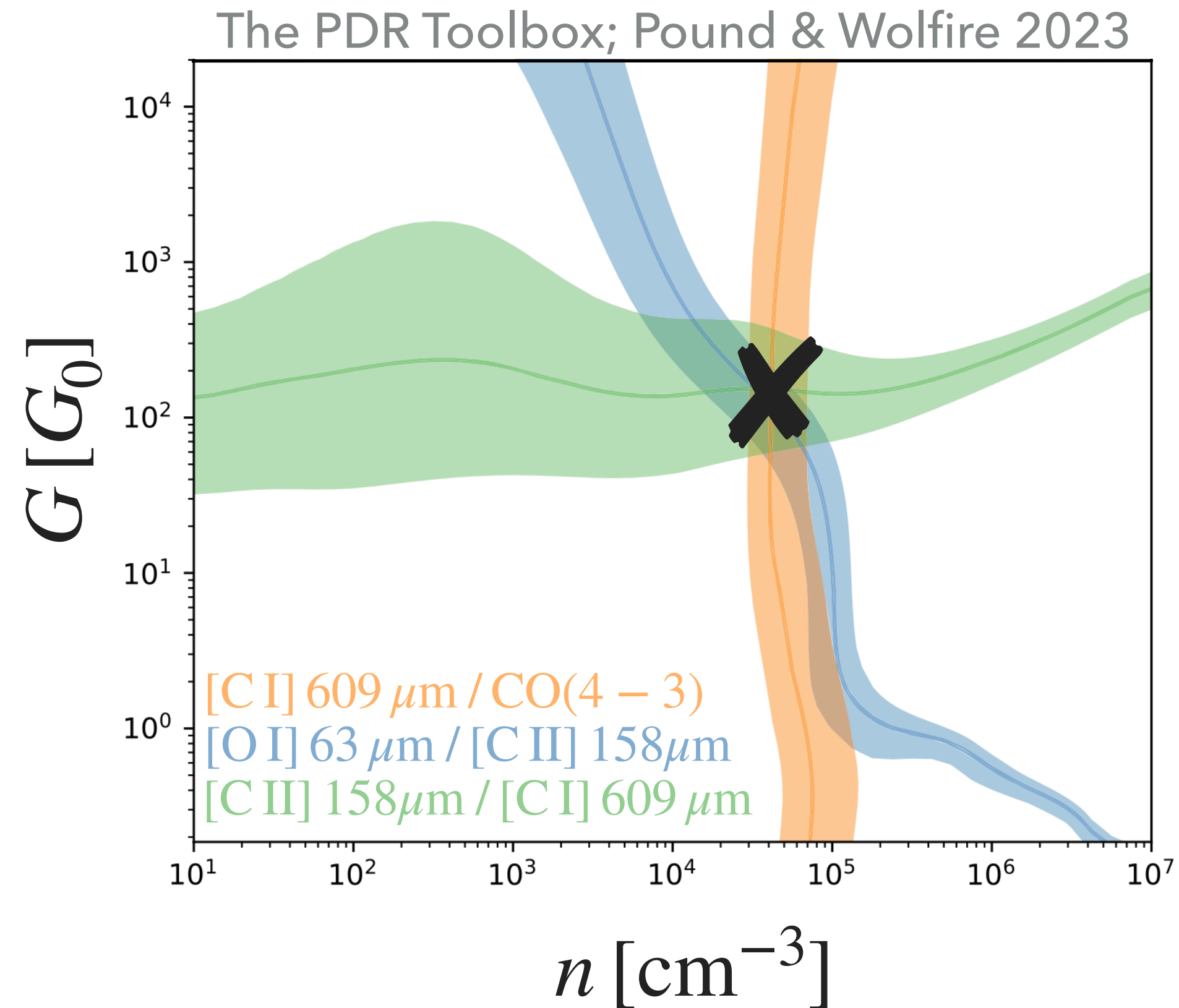


"Star-formation Efficiency"

$$\frac{\text{Formation rate of stars}}{\text{Gas available to form stars}}$$

Gas and dust conditions

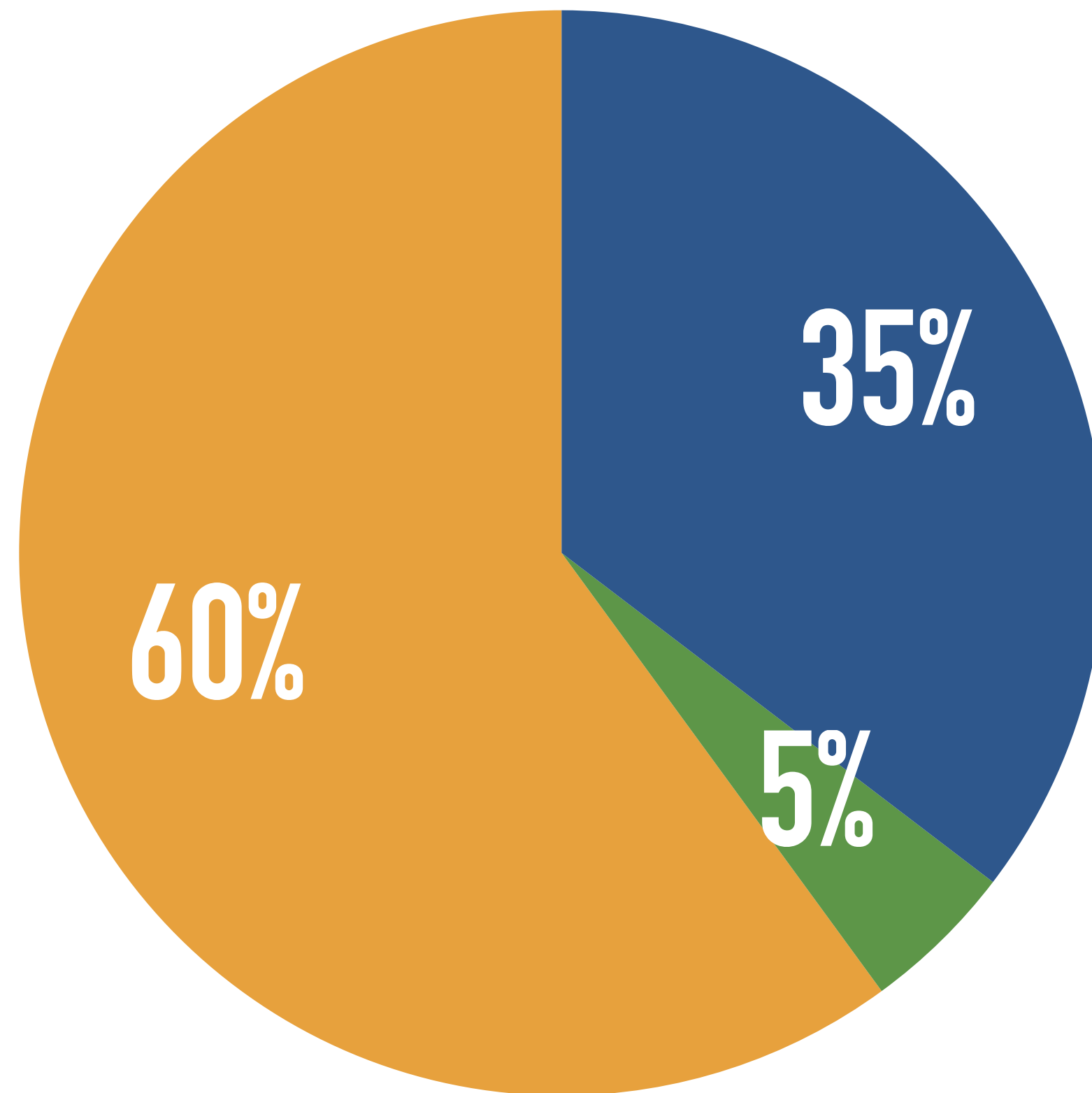
# DIAGNOSING THE ISM WITH LINES IN THE MID- AND FAR-IR



# REDSHIFT DEMOGRAPHY FOR ALL [C II]\*\*\* DETECTIONS

$Z = 0$

Herschel, SOFIA



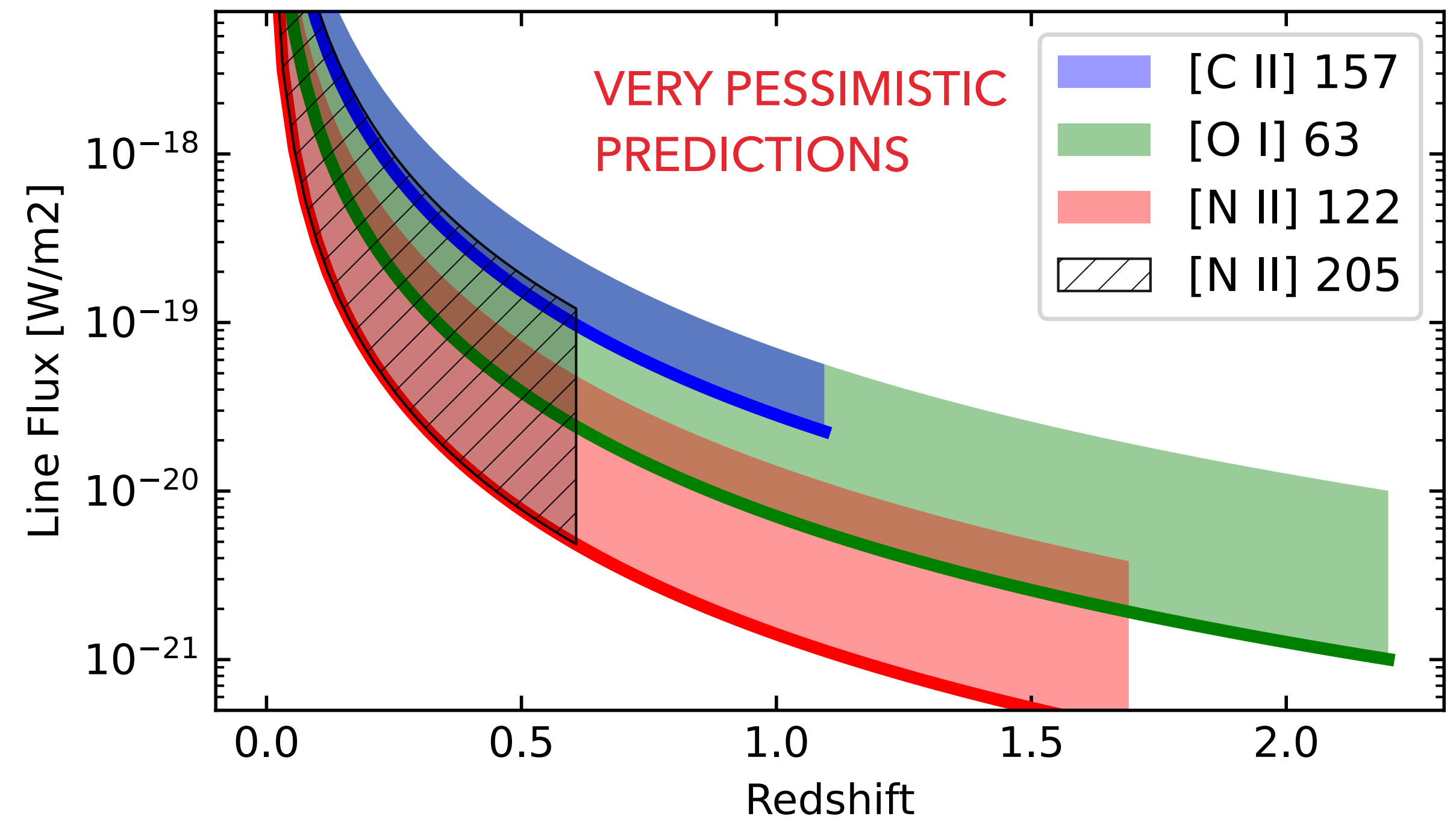
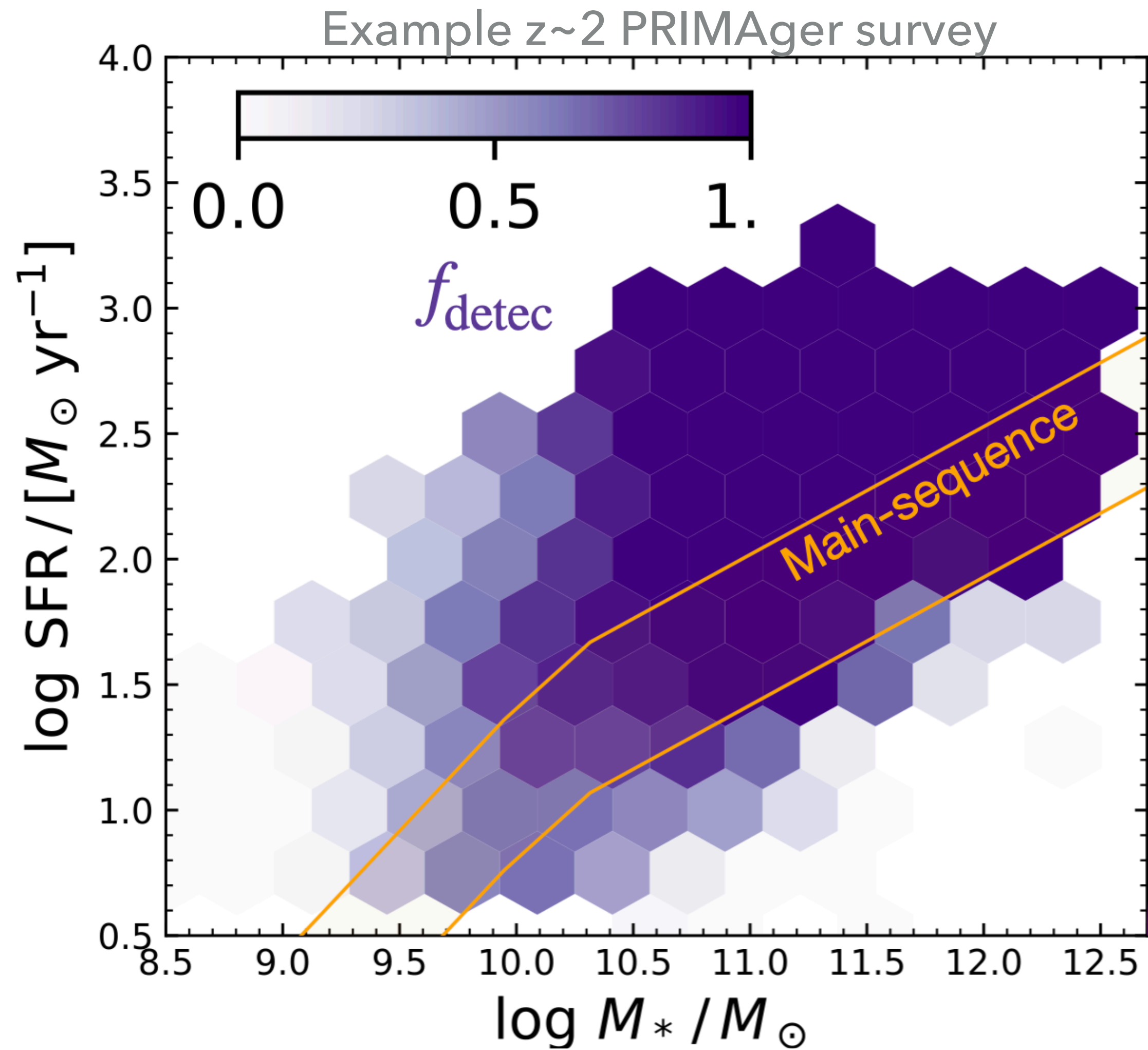
$Z > 3$

ALMA, Herschel, APEX,  
SMA, CARMA

$Z \sim 1 - 2$

ALMA Band 9 and 10 - fairly  
time expensive

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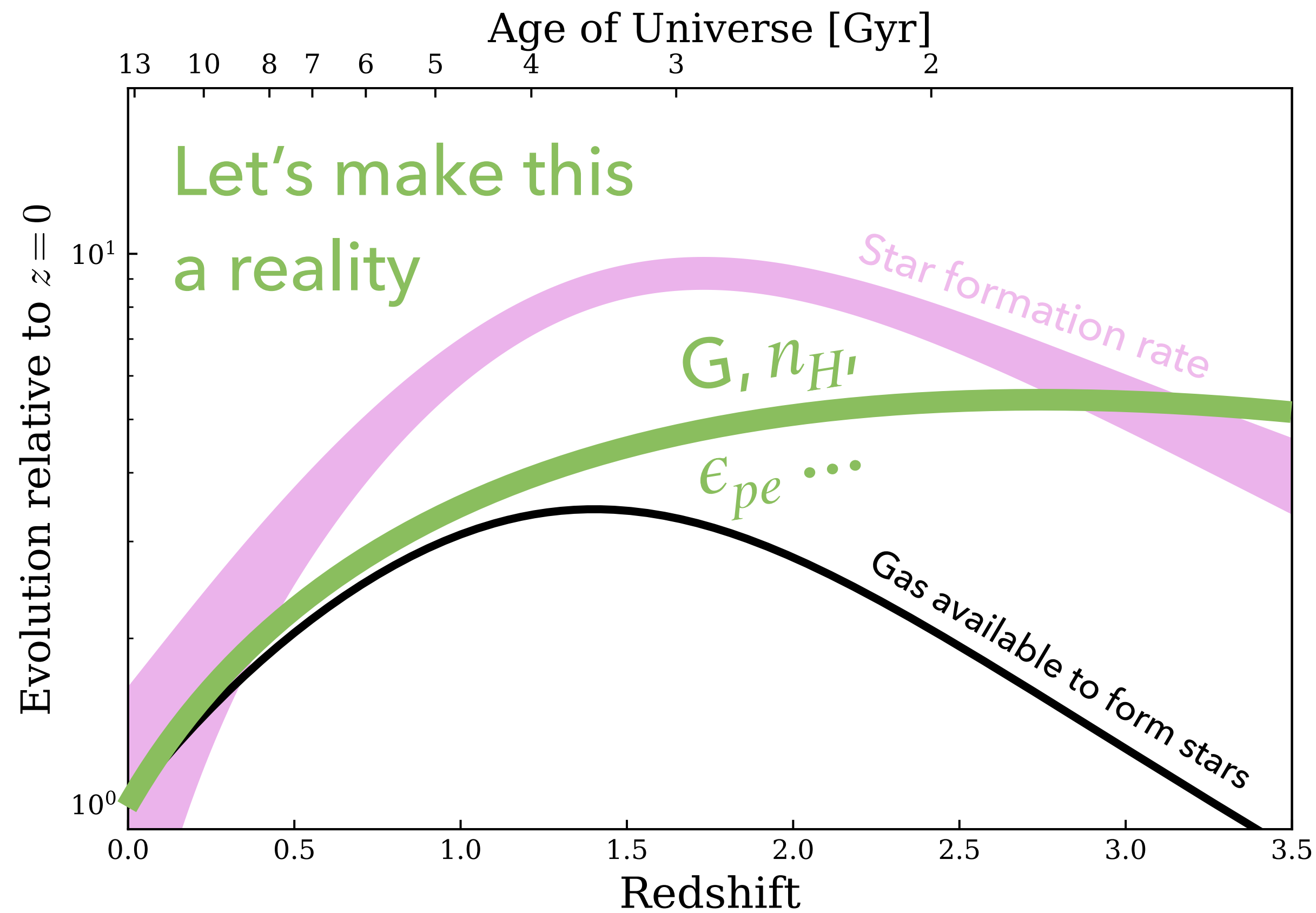
Blind PRIMAGER surveys yield  $\sim 1000$ s of FIR sources at high-redshift for followup

# FAR-IR LINE FOLLOW-UP TO MEASURE GAS AND DUST CONDITIONS IN DISTANT GALAXIES

Graphics compiled from:

*Great Observatories: The Past and Future of Panchromatic Astrophysics*, Armus, L; Megeath, T; G. Tremblay\* and SAG-10, 2022

*Origins Space telescope Mission Concept Study Report*, Meixner, M and the OSTST., 2019



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*Always happy to talk (science, or other) so please reach out!*