

Dust Emission via Absorption and Reprocessing, from
Starlight to IR

(DEAR SIR)

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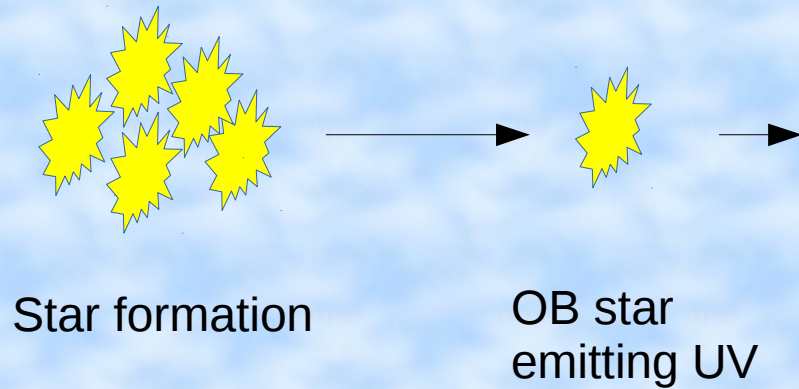
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Reju Sam John, Kanti Jotania, Mahadev Pandge

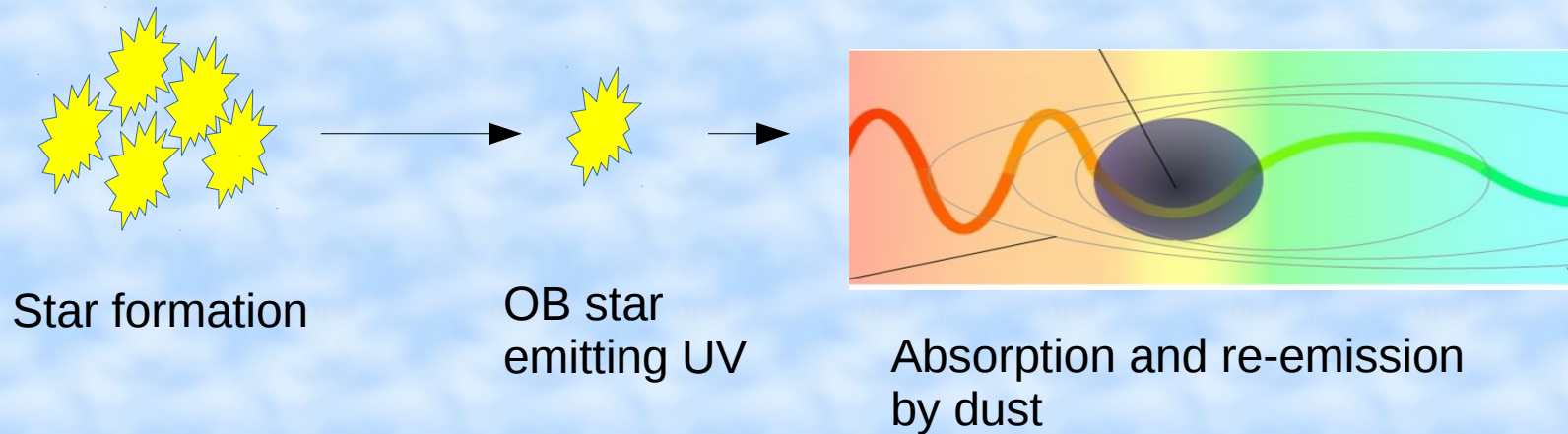
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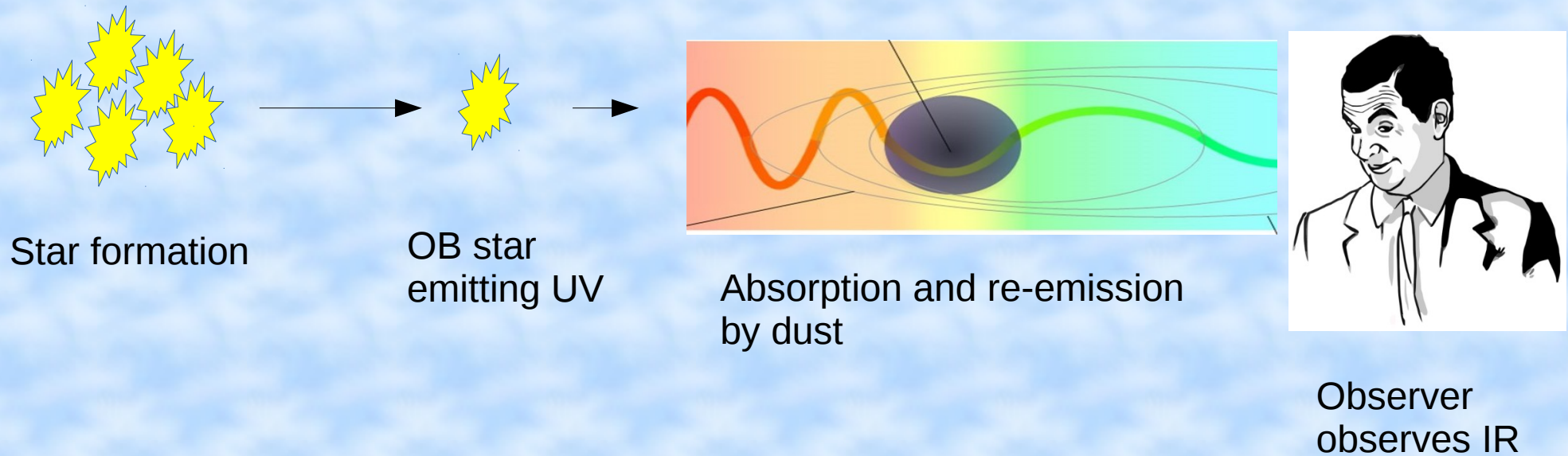
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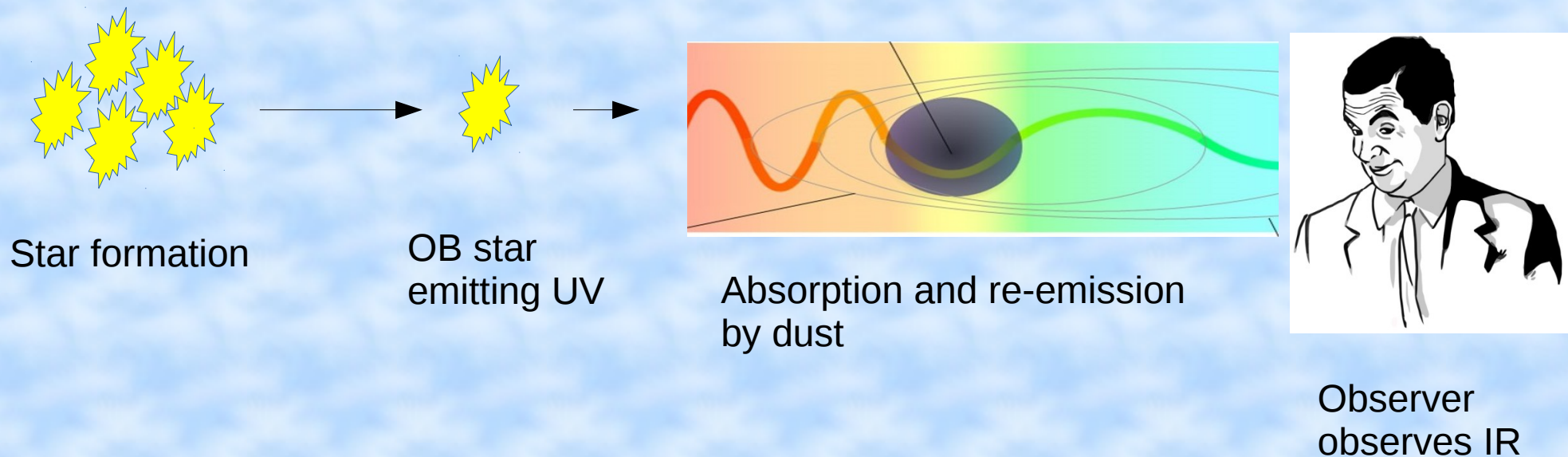
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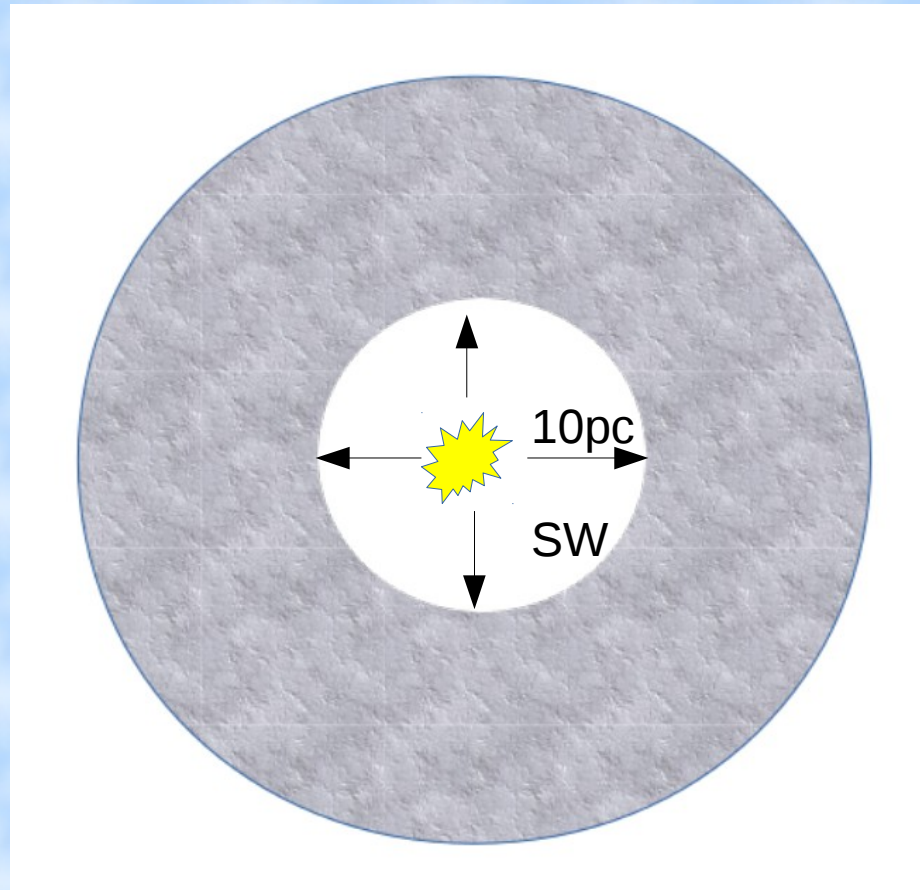
$$\text{SFR}(M_{\odot} \text{ year}^{-1}) = 4.5 \times 10^{-44} L_{FIR} (\text{ergs s}^{-1}) \text{ (starbursts),}$$

(Kennicutt 1998)

IR band = 8–1000 μm

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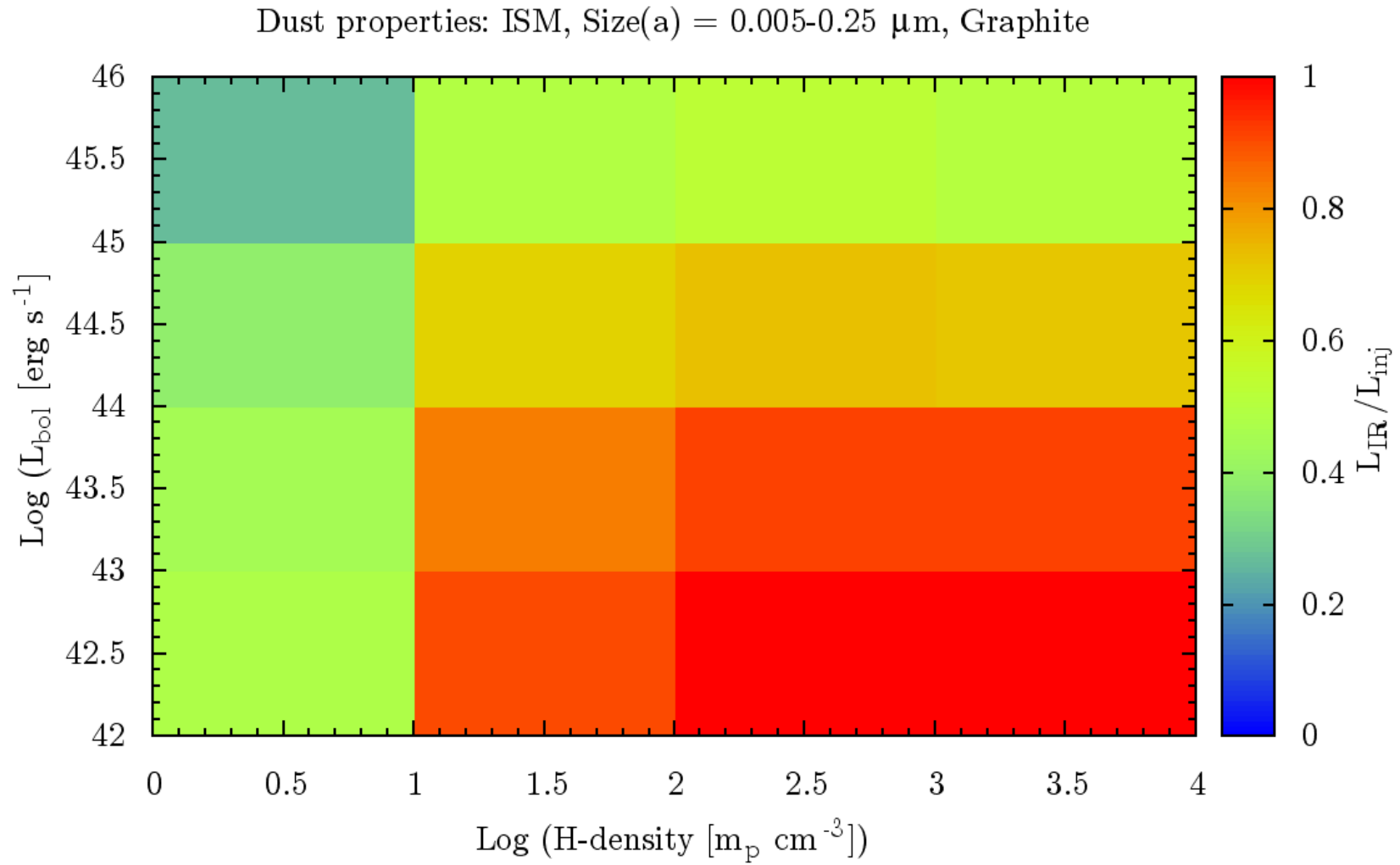
How we have planned to do it ?



SW = Stellar Wind

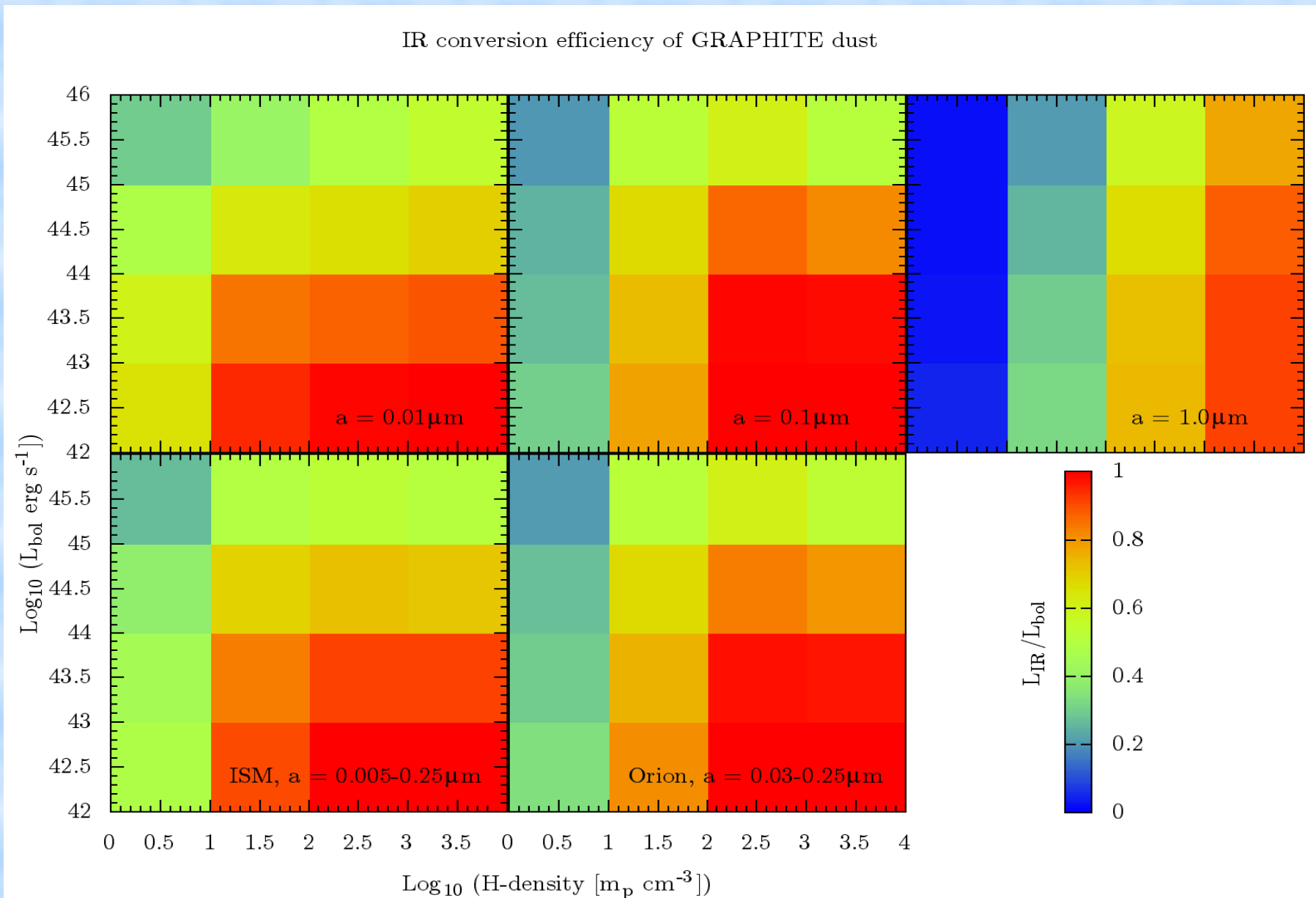
Results

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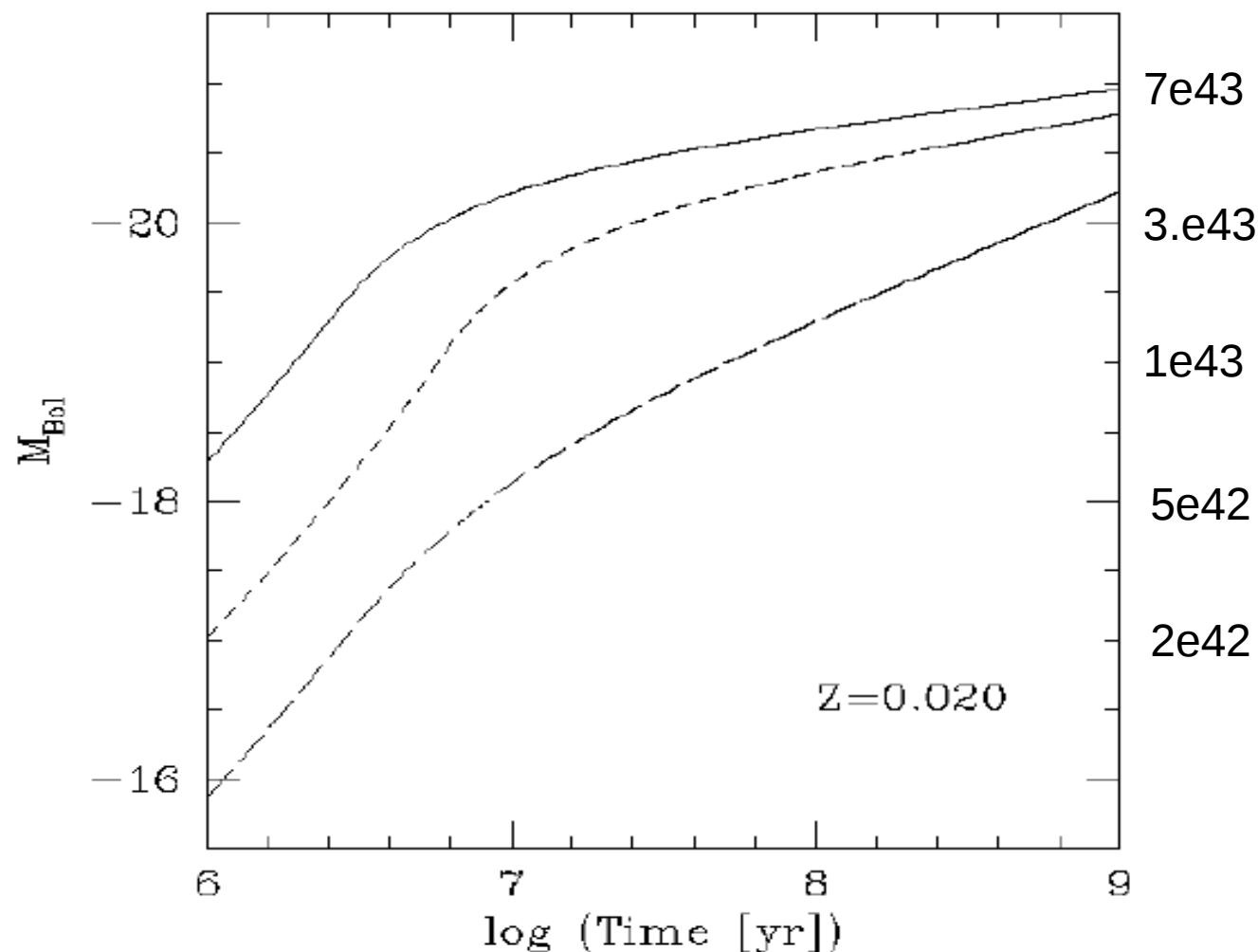
Results

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Uncertainties

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Uncertainty ~ 1 order

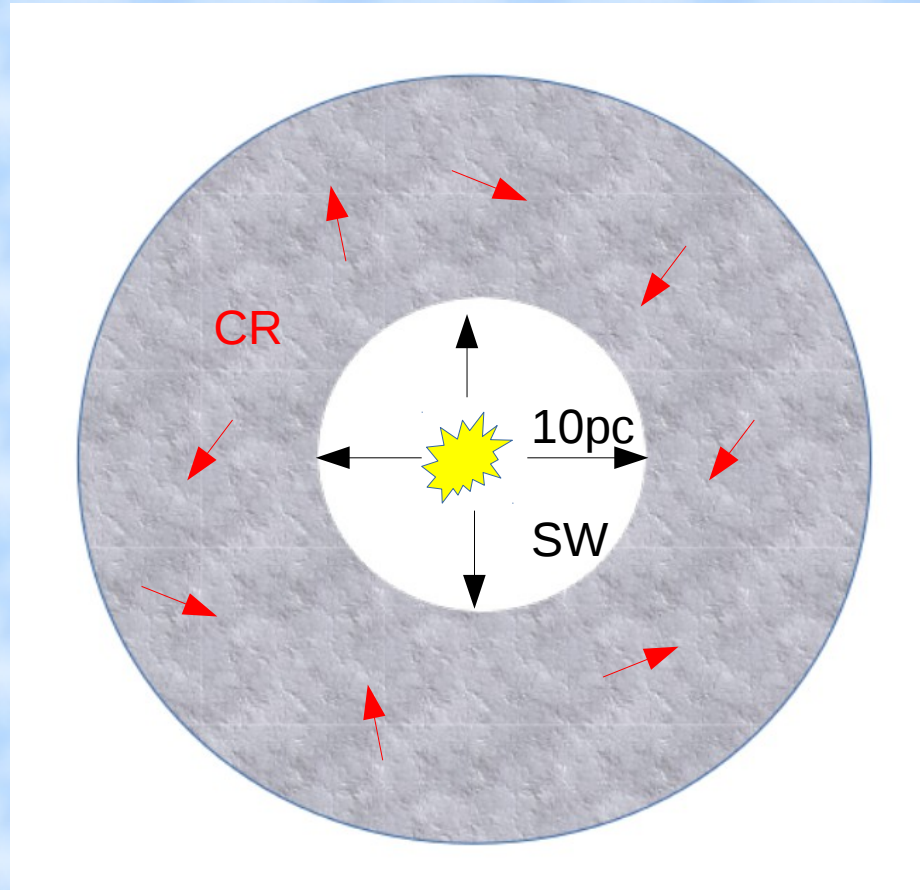
Stellar synthesis model
Starburst99

FIG. 46b

FIG. 46.—Absolute bolometric magnitude vs. time. Star formation law: continuous; *solid line*, $\alpha = 2.35$, $M_{\text{up}} = 100 M_{\odot}$; *long-dashed line*, $\alpha = 3.30$, $M_{\text{up}} = 100 M_{\odot}$; *short-dashed line*, $\alpha = 2.35$, $M_{\text{up}} = 30 M_{\odot}$; (a) $Z = 0.040$; (b) $Z = 0.020$; (c) $Z = 0.008$; (d) $Z = 0.004$; (e) $Z = 0.001$.

Uncertainties

(DEAR SIR)



Background Cosmic Rays
CR in magnetic field !

Cosmic ray heating vs molecule formation !!

SW = Stellar Wind

Conclusions

- 1) Dust properties are important in observations of SFR region.
- 2) Uncertainty from time varying luminosity is important.
- 3) CR heating has to be properly accounted for.
- 4) We are planning to explore this area.

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Do not know CLOUDY

Solve a problem partially

Think more

Go deep

==> Excited to learn

==> Even more excited

==> Find troubles

==> CONFUSED !!

Our project sky became HAZY in a CLOUDY day!!

Thanks ...