X-ray Spectra of Hot CGM around Spiral galaxies

Connecting Simulations to Observations

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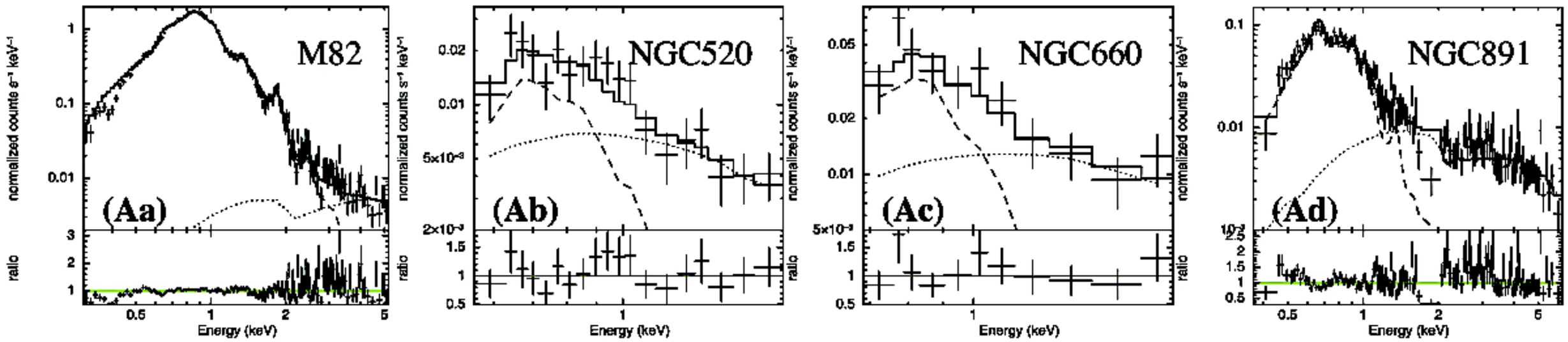
CGM: Repository of Information

Gas ??

Outflows

Motivation



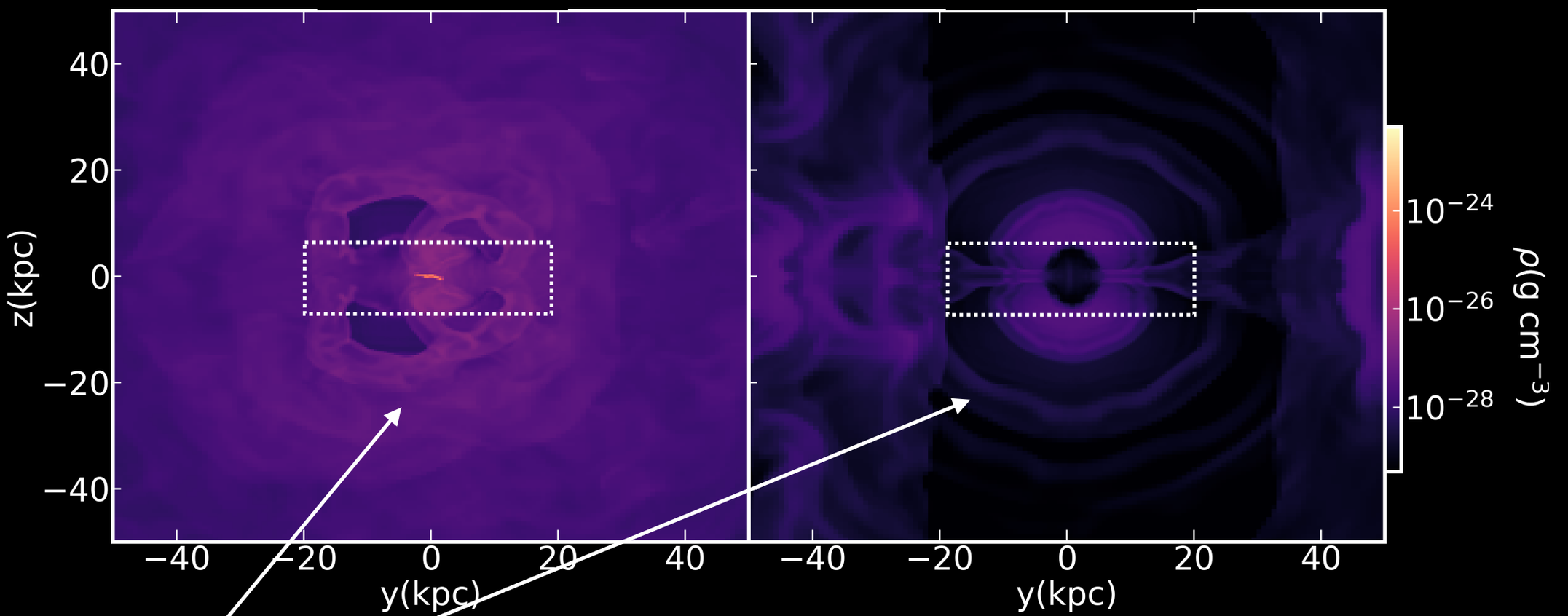
Jiang-Tao Li and Q. Daniel Wang, 2013, MNRAS, 428, 2085

A number of observations of CGM already exists, thanks to Chandra and XMM.

Observers use 1-T and 2-T models to estimate physical properties of the underlying plasma.

But gas is multiphase!
-t is diff

Slices- Density Temperature Metallicity



Low SFR

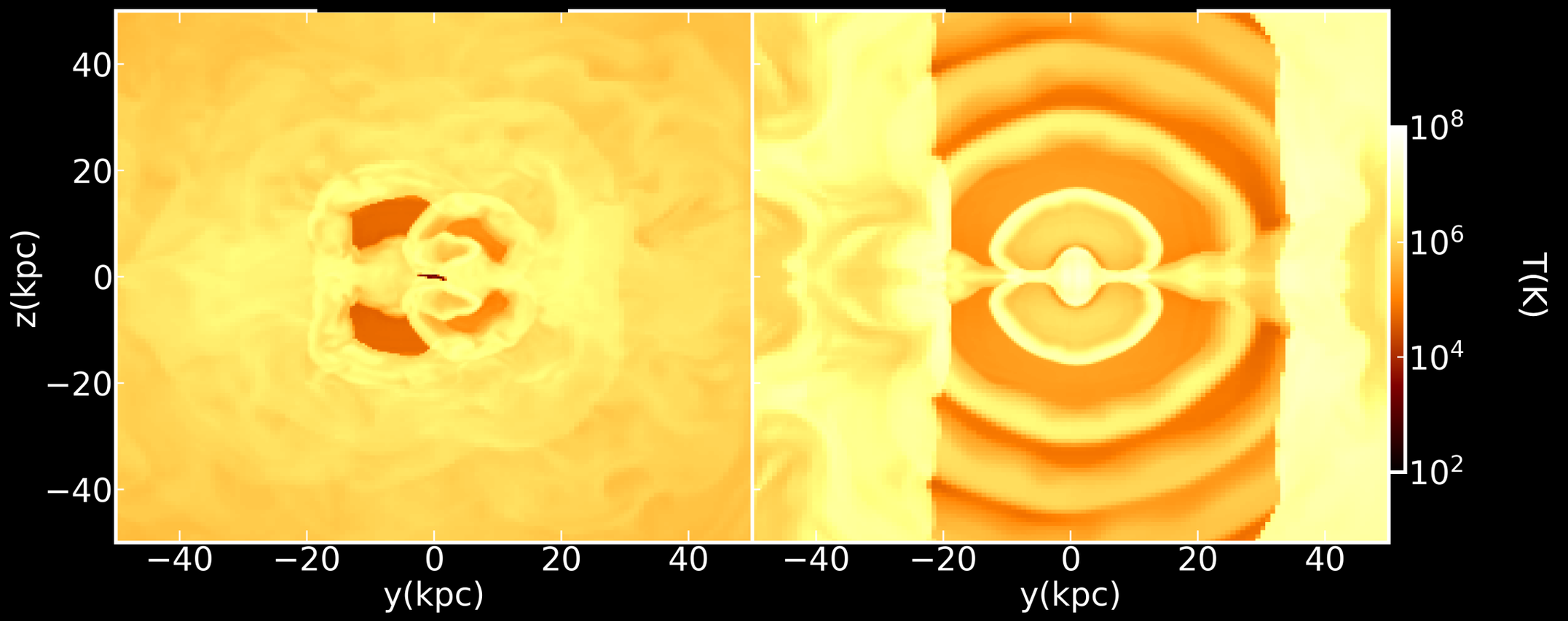
High SFR

Shells-no

From successive energy dumps-

shock

Slices- Density **Temperature** Metallicity



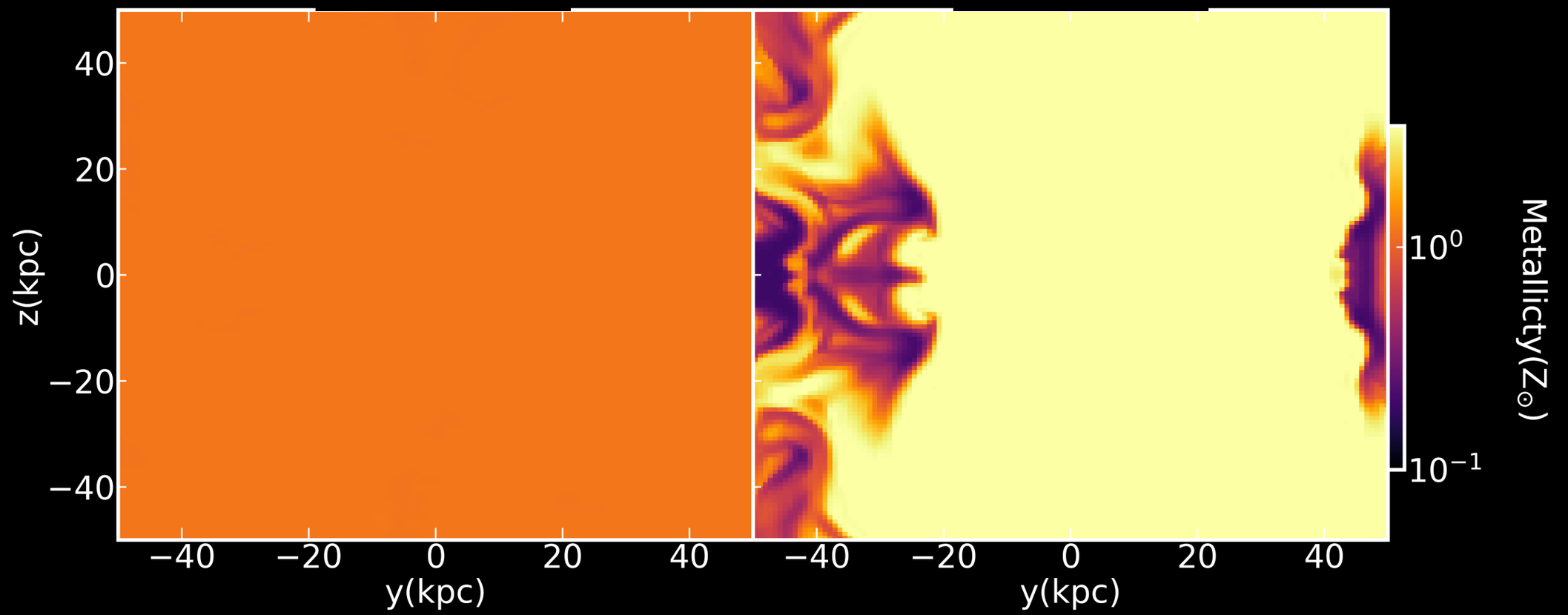
Low SFR

High SFR

Cold Gas-no
T<1000K

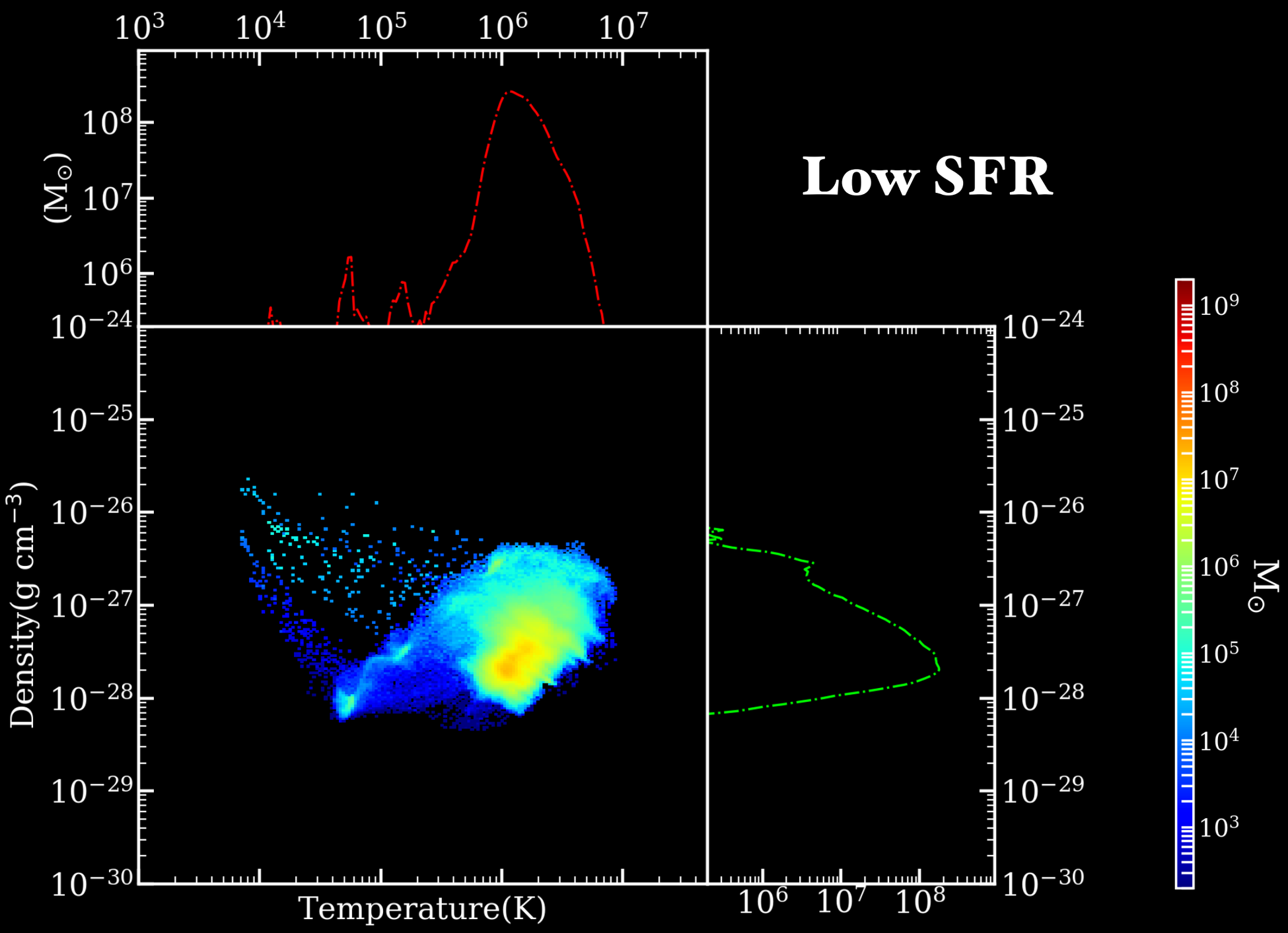
Hot Gas-no
T>10 MK

Slices- Density Temperature Metallicity



Low SFR **High SFR**

Getting Parameters- Reproducing 1T Model



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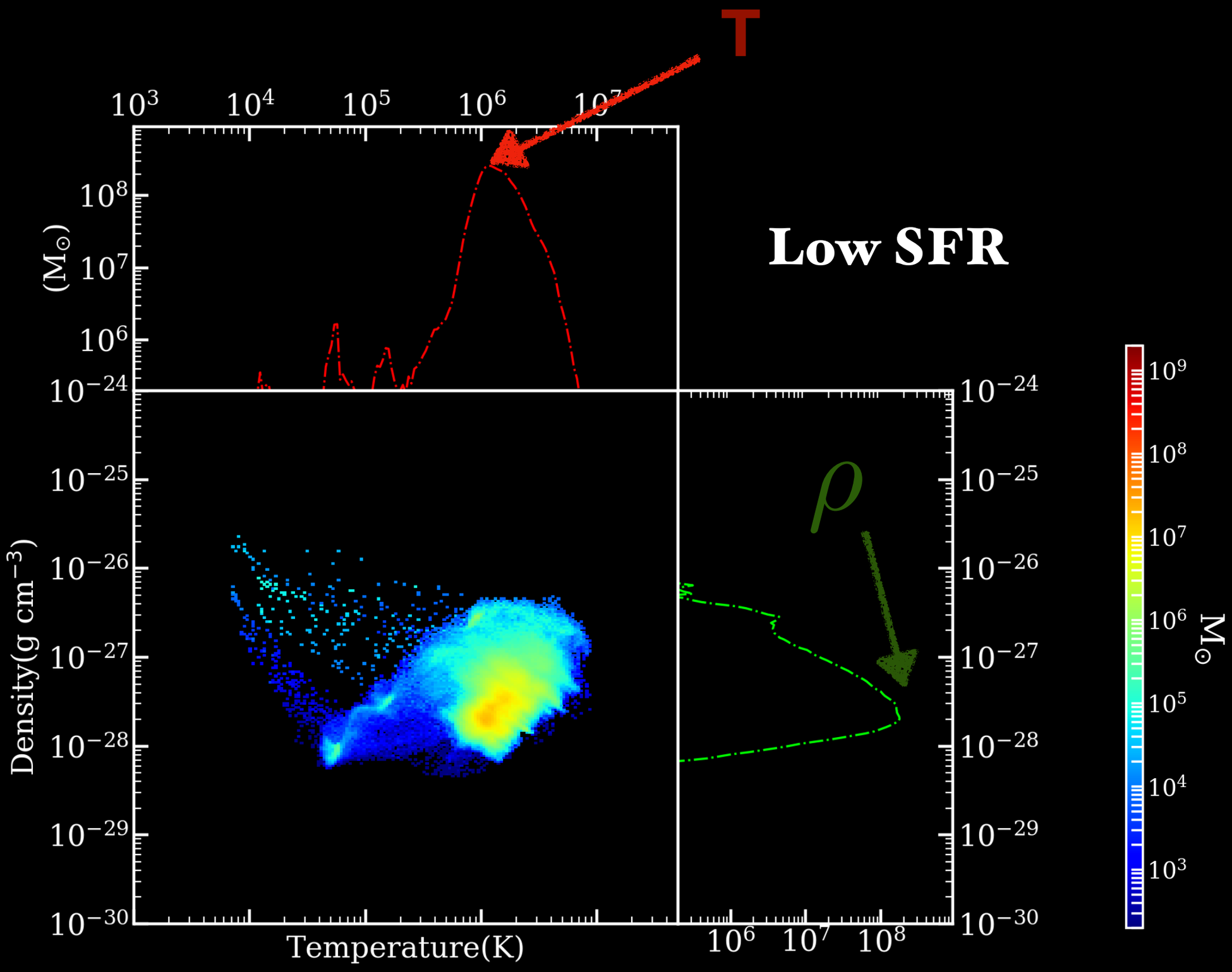
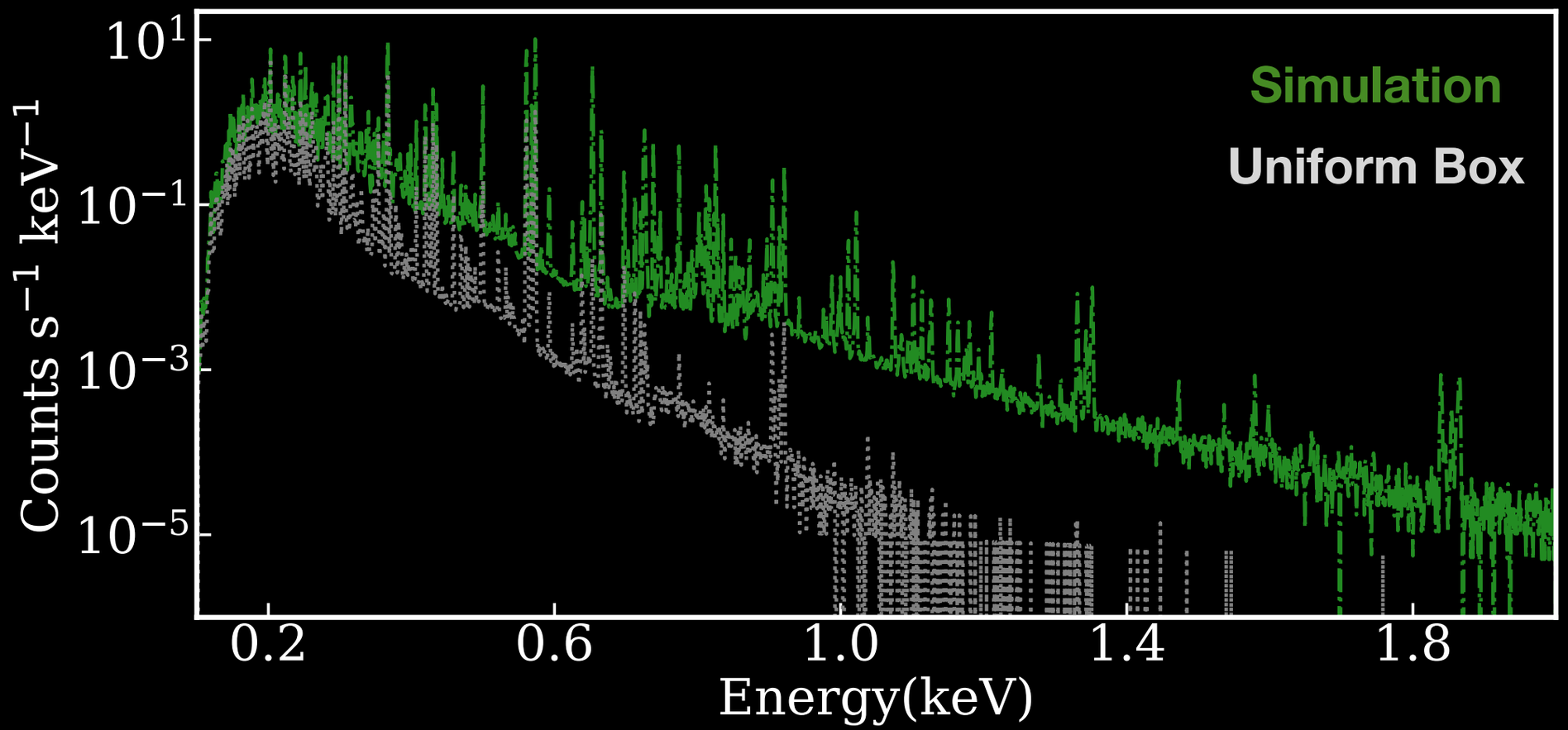


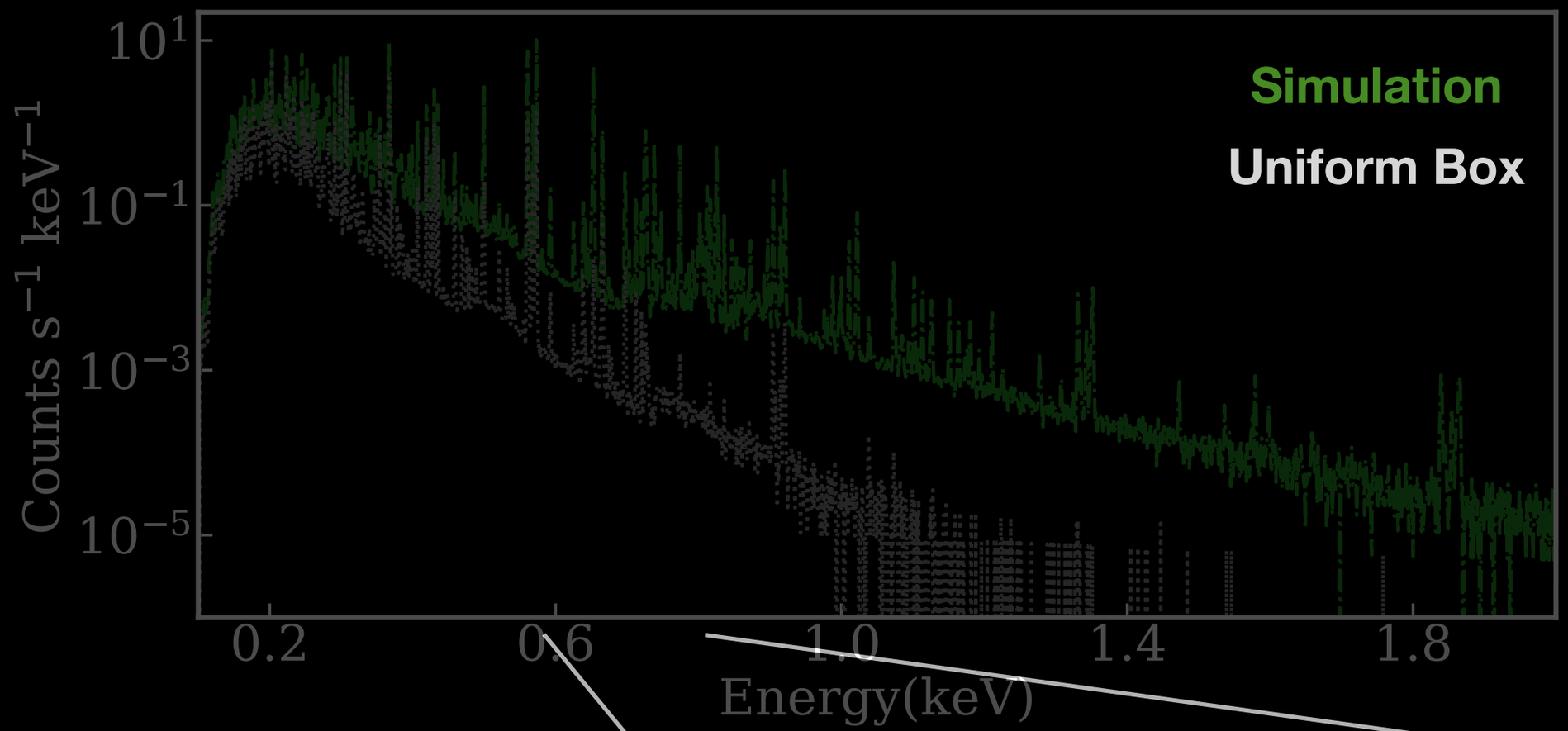


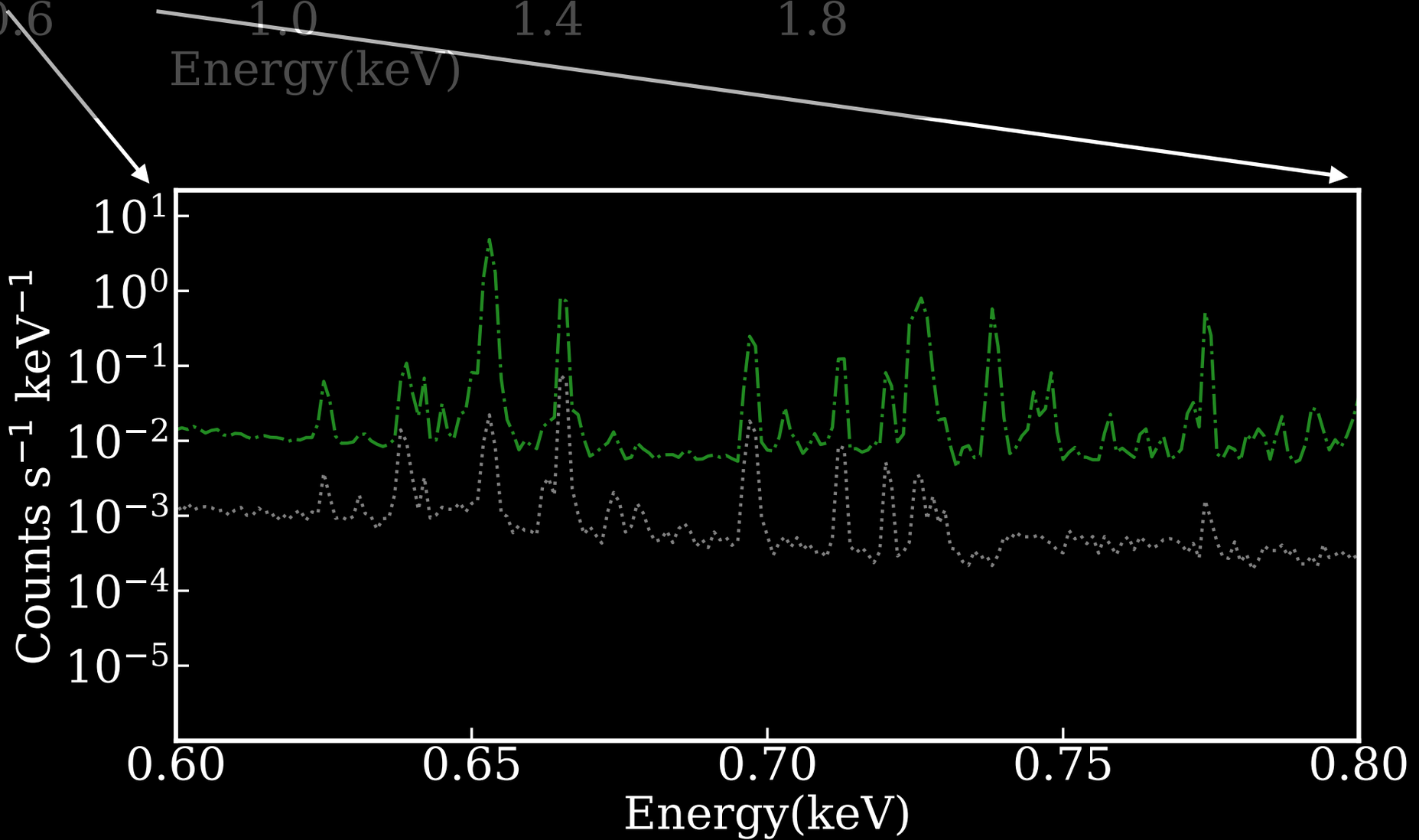
Producing Spectra

-using pyXSIM

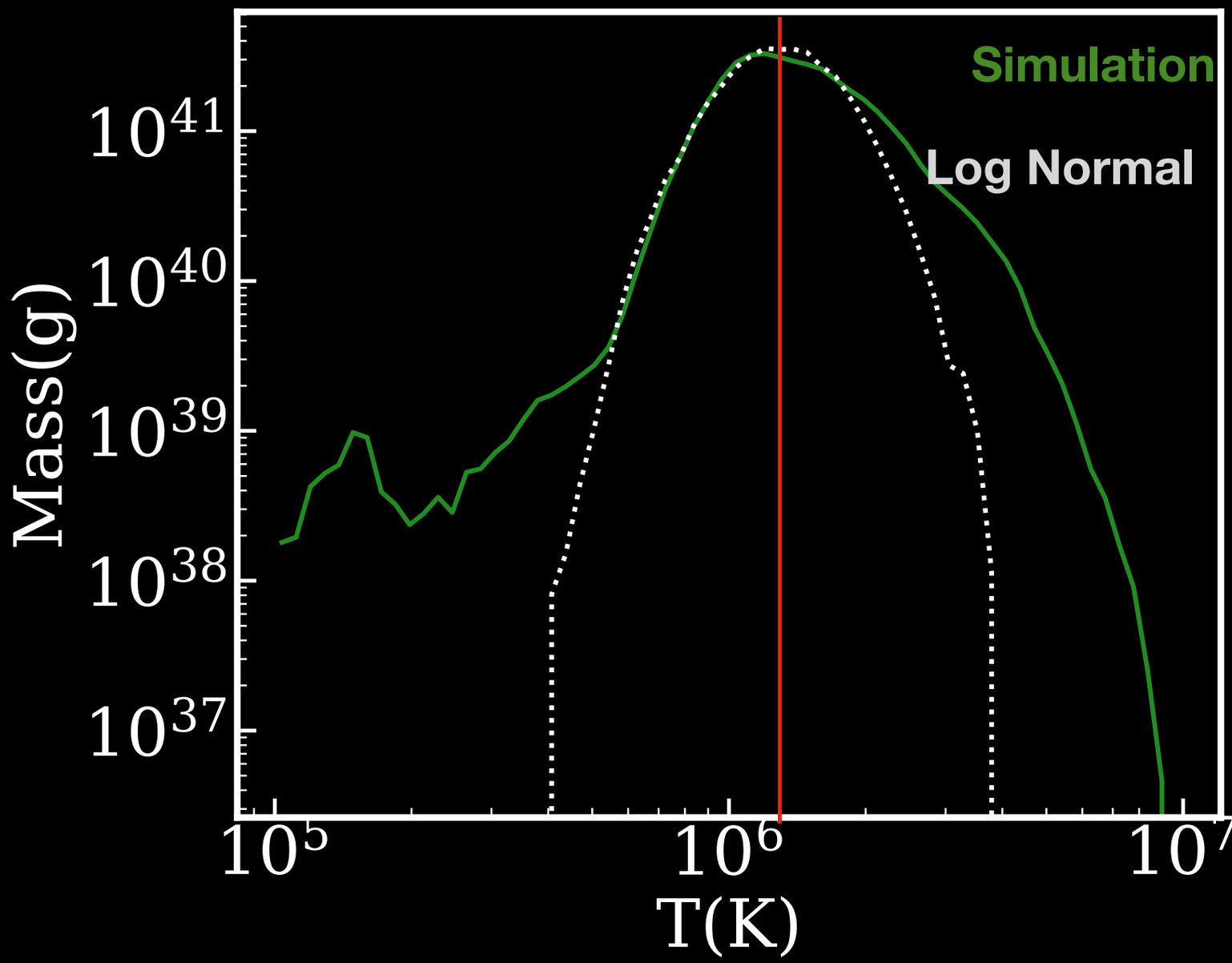
Low SFR

Producing Spectra



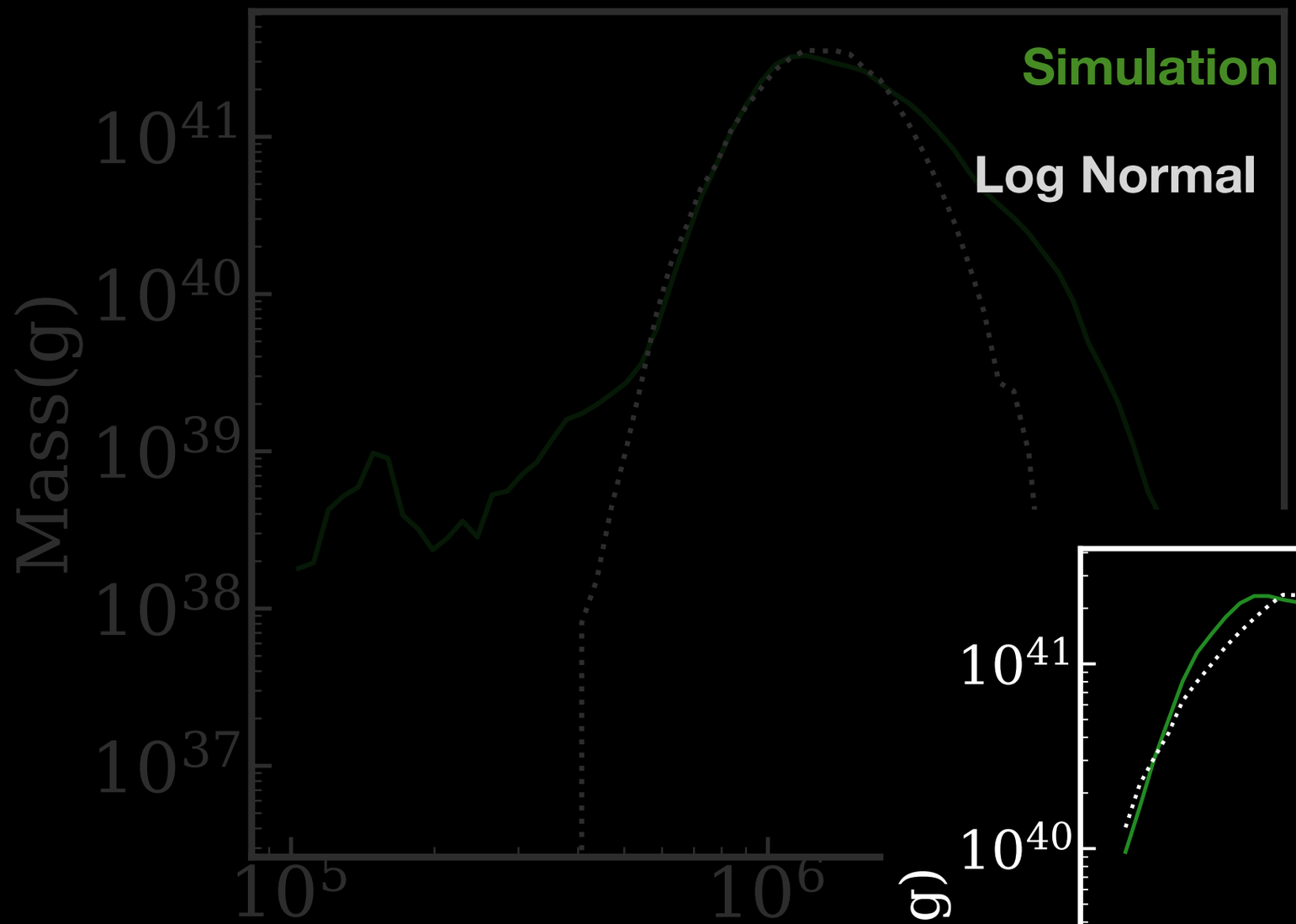


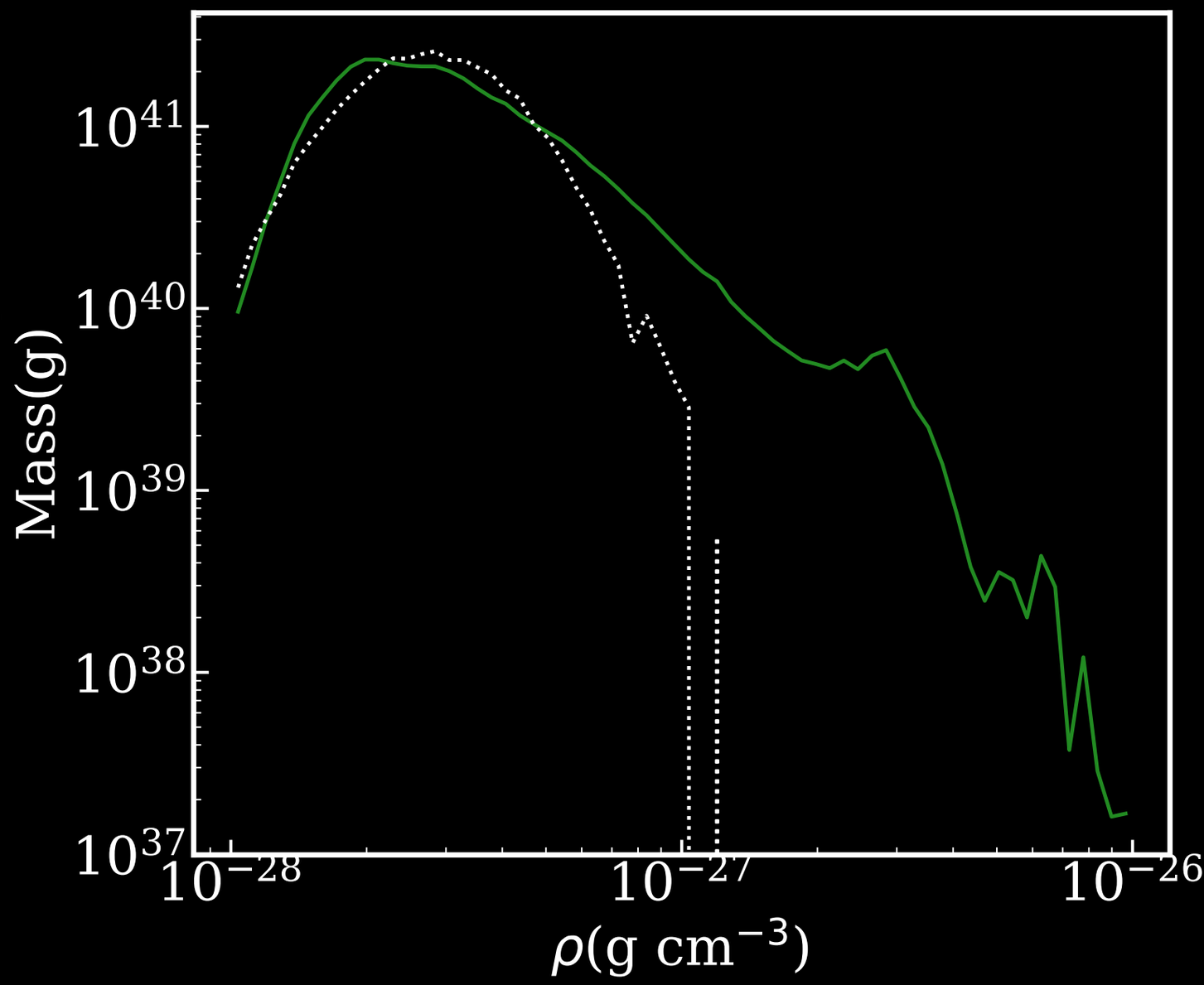
Low SFR

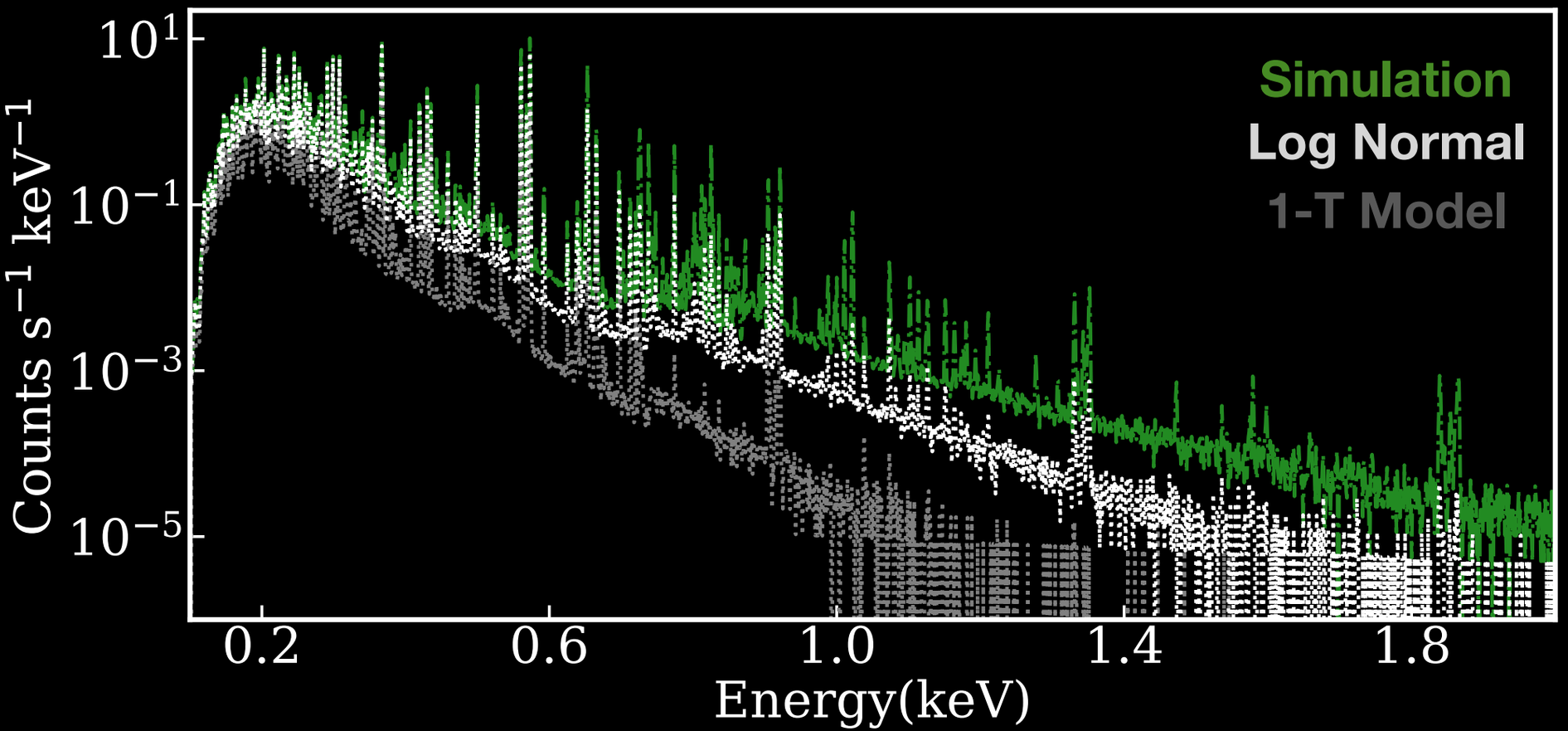


Using Log Normal Distribution

Using Log Normal Distribution







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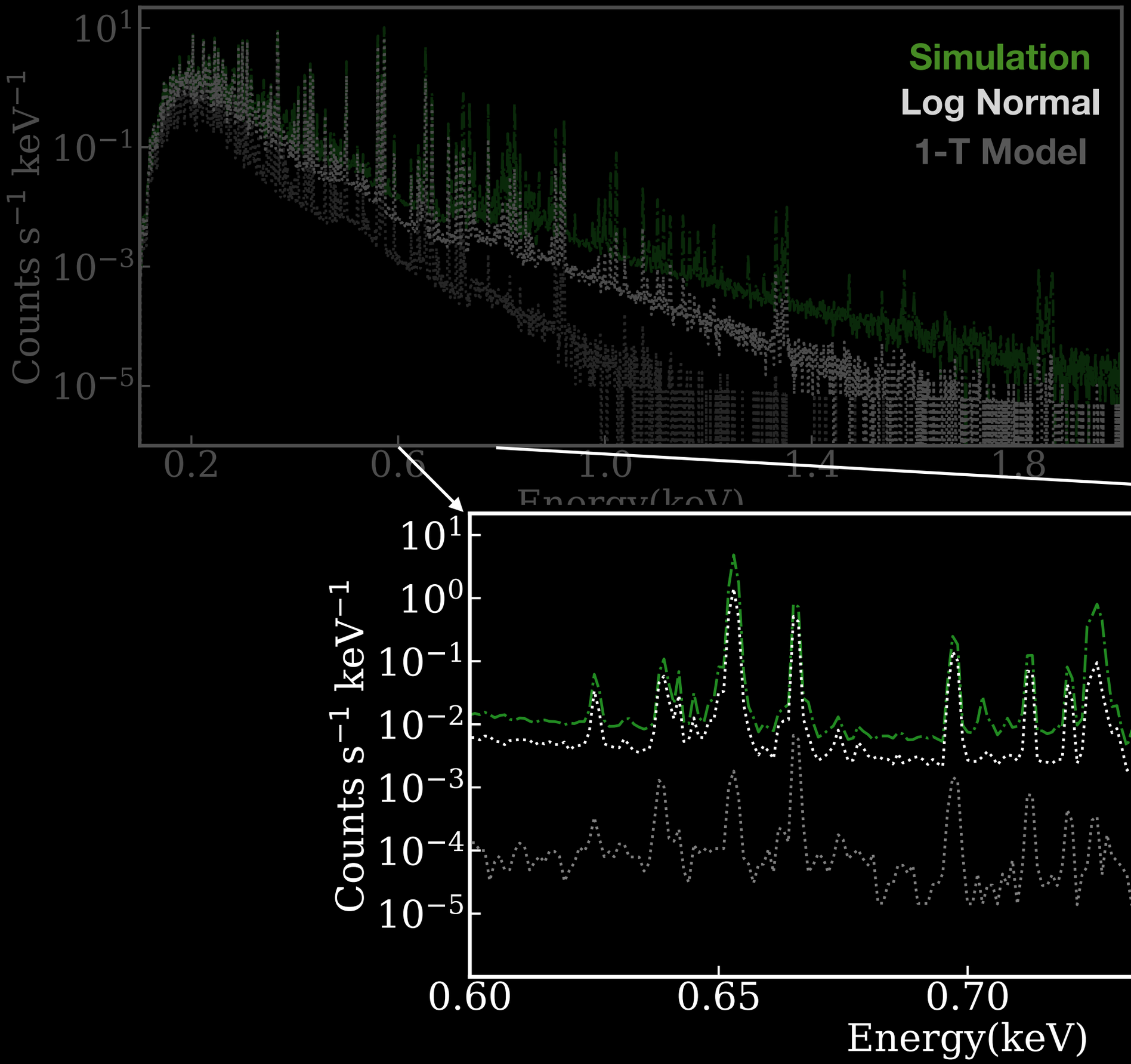
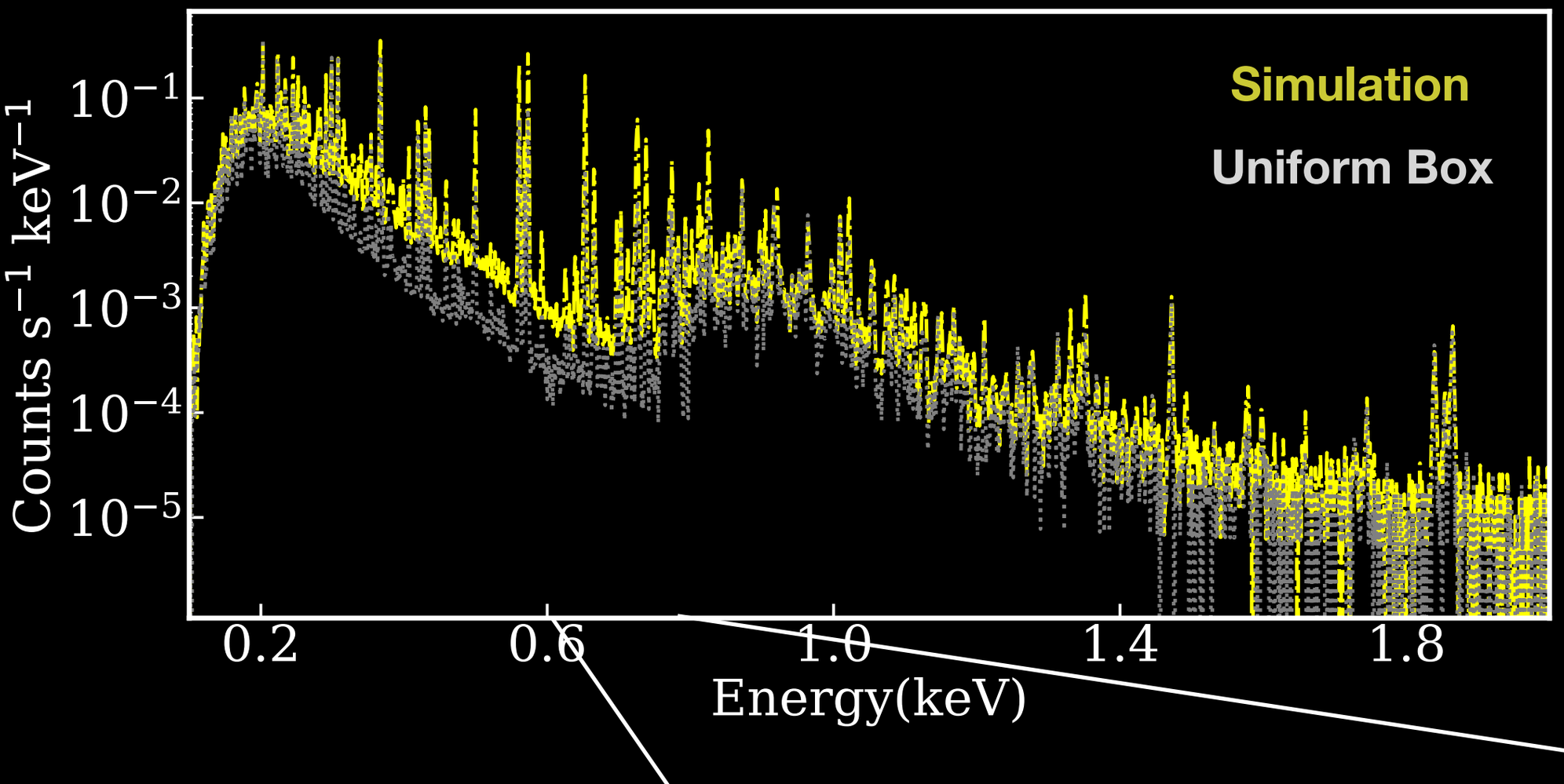
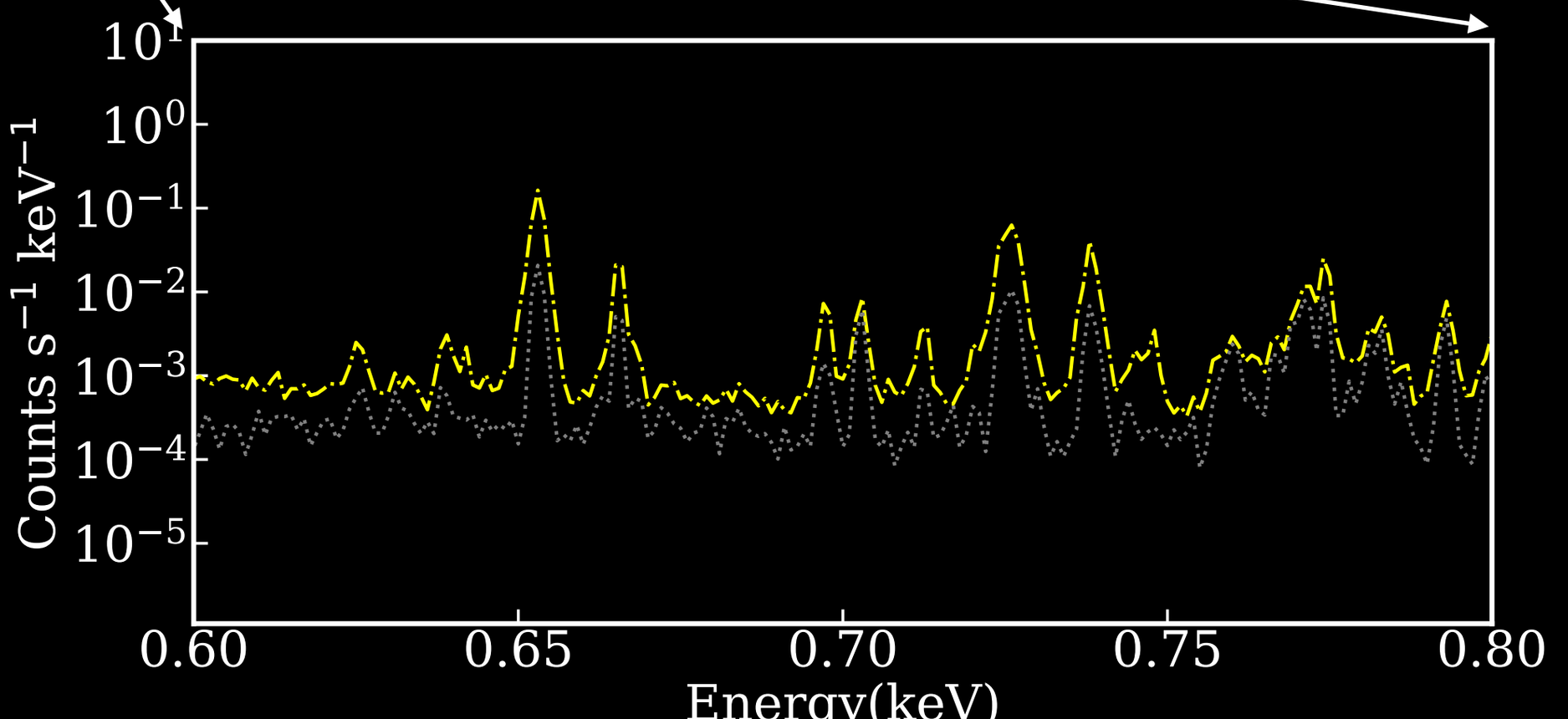


Using Log Normal Distribution

Producing Spectra





High SFR

Conclusions

- Star formation creates multiphase distribution of gas in galaxy.

- Using one or two representative temperatures for plasma may not be entirely accurate.

- Log-Normal temperature distribution can give a better fit to the spectra.