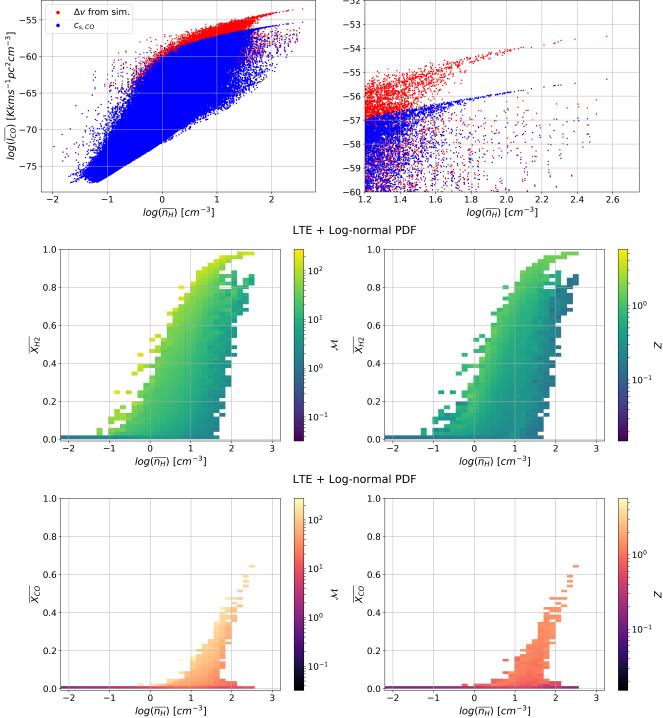
```
LTE + Log-normal PDF
In [72]:
             1 M_H2 = np.sum(m_H2_bar)/M_sun
              2 print M_H2/1e9
            2.8471647994275058
              #using velocity dispersion from sim
L_CO_SI_1 = np.sum(1_CO_SI_bar_1*(cell_width_arr**3))
print L_CO_SI_1/1e8
In [73]:
            19.4797439169398
                 #using isothermal sound speed
              2 L_CO_SI_2 = np.sum(1_CO_SI_bar_2*(cell_width_arr**3))
3 print L_CO_SI_2/le8
            0.7345739542543737
             #using velocity dispersion from sim
alpha_CO_1 = L_CO_SI_1/M_H2
print alpha_CO_1
In [75]:
            0.6841804141740124
             #using isothermal sound speed
alpha_CO_2 = L_CO_SI_2/M_H2
print alpha_CO_2
In [76]:
            0.025800190926850392
                                    LTE + Log-normal PDF
                                                       -53
                                                       -54
                                                       -55
                                                       -56
```



```
LTE + Power-law PDF
                           1 M_H2 = np.sum(m_H2_bar)/M_sun
2 print M_H2/1e9
               In [25]:
                          2.8184595847244887
               In [26]:
                            1 #using velocity dispersion from sim
                             2 L_CO_SI_1 = np.sum(1_CO_SI_bar_1*(cell_width_arr**3))
                            3 print L_CO_SI_1/1e8
                           10.585428671137132
                           1 #using isothermal sound speed
                            L_CO_SI_2 = np.sum(l_CO_SI_bar_2*(cell_width_arr**3))
                            3 print L_CO_SI_2/1e8
                           0.6103197747485133
                                #using velocity dispersion from sim
alpha_CO_1 = L_CO_SI_1/M_H2
               In [28]:
                            3 print alpha_CO_1
                           0.3755749675641307
               In [29]:
                            1 #using isothermal sound speed
                            2 alpha_CO_2 = L_CO_SI_2/M_H2
3 print alpha_CO_2
                           0.02165437383088016
                                               LTE + Power-law PDF
                                                               -52
\Delta v from sim.
                                                               -53
                                                               -54
                                                               -55
                                                               -56
                                                               -57
                                                               -58
                                                               -60
1.2
                    Ó
                                                                                   1.6
                                                                                            1.8
                                                                                                    2.0
                                                                                                            2.2
                                                                                                                     2.4
                                                                                                                             2.6
                log(\overline{n_H}) \ [cm^{-3}]
                                                                                            log(\overline{n_H}) [cm^{-3}]
                                                    LTE + Power-law PDF
                                                                     1.0
                                                      10<sup>2</sup>
                                                                     0.8
                                                                                                                                   10<sup>0</sup>
                                                      10<sup>1</sup>
                                                                     0.6
                                                                 XHZ
                                                            Z
                                                                     0.4
                                                      100
                                                                                                                                   10-1
                                                                     0.2
                                                      10-1
                                                                     0.0
                          i
                                                                                   -1
                                                                                                       i
                                                                                                                ż
              log(\overline{n_H}) [cm^{-3}]
                                                                                          log(\overline{n_H}) [cm^{-3}]
                                                      LTE + Power-law PDF
                                                                      1.0
                                                         10<sup>2</sup>
                                                                      0.8
                                                                                                                                    10°
                                                        10<sup>1</sup>
                                                                      0.6
                                                                   \chi_{CO}
                                                                      0.4
                                                        10<sup>0</sup>
                                                                                                                                    10^{-1}
```

0.2

0.0

-1

 $log(\overline{n_H})$ [cm⁻³]

3

-55

-60

-65

-70

-75

-2

1.0

8.0

0.6

0.4

0.2

0.0

1.0

0.8

0.6

0.4

0.2

0.0

-1

 $log(\overline{n_H}) [cm^{-3}]$

 χ_{CO}

_2

-1

XH2

-1

 $log(\overline{l_{CO}})$ [Kkms⁻¹pc²cm⁻³]

 $C_{S,CO}$