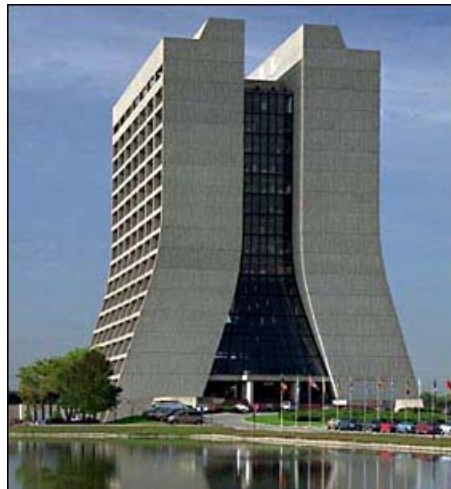


# Modeling Cosmic Reionization (Leave No Photon Behind)



Nick Gnedin

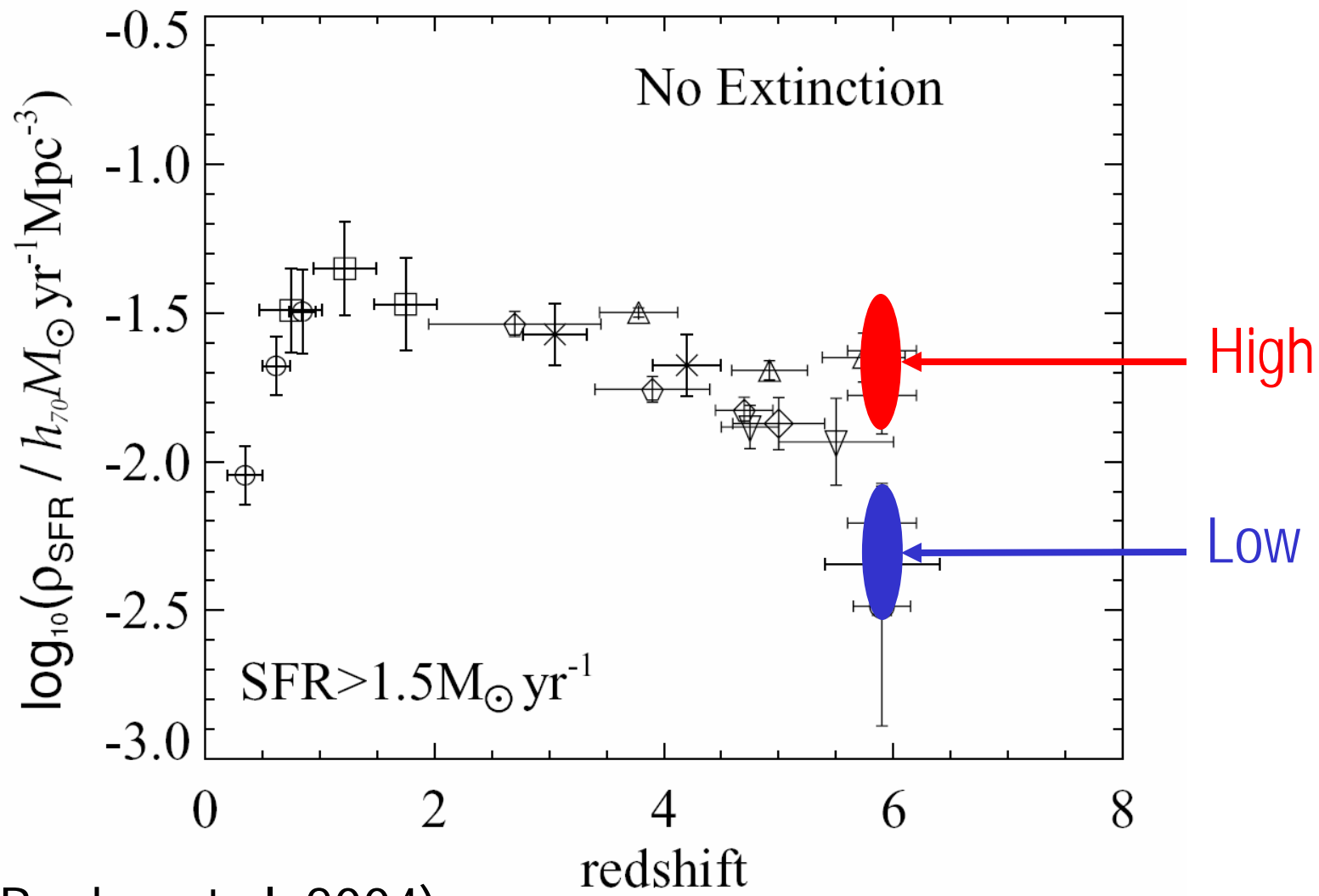




# Co-starring



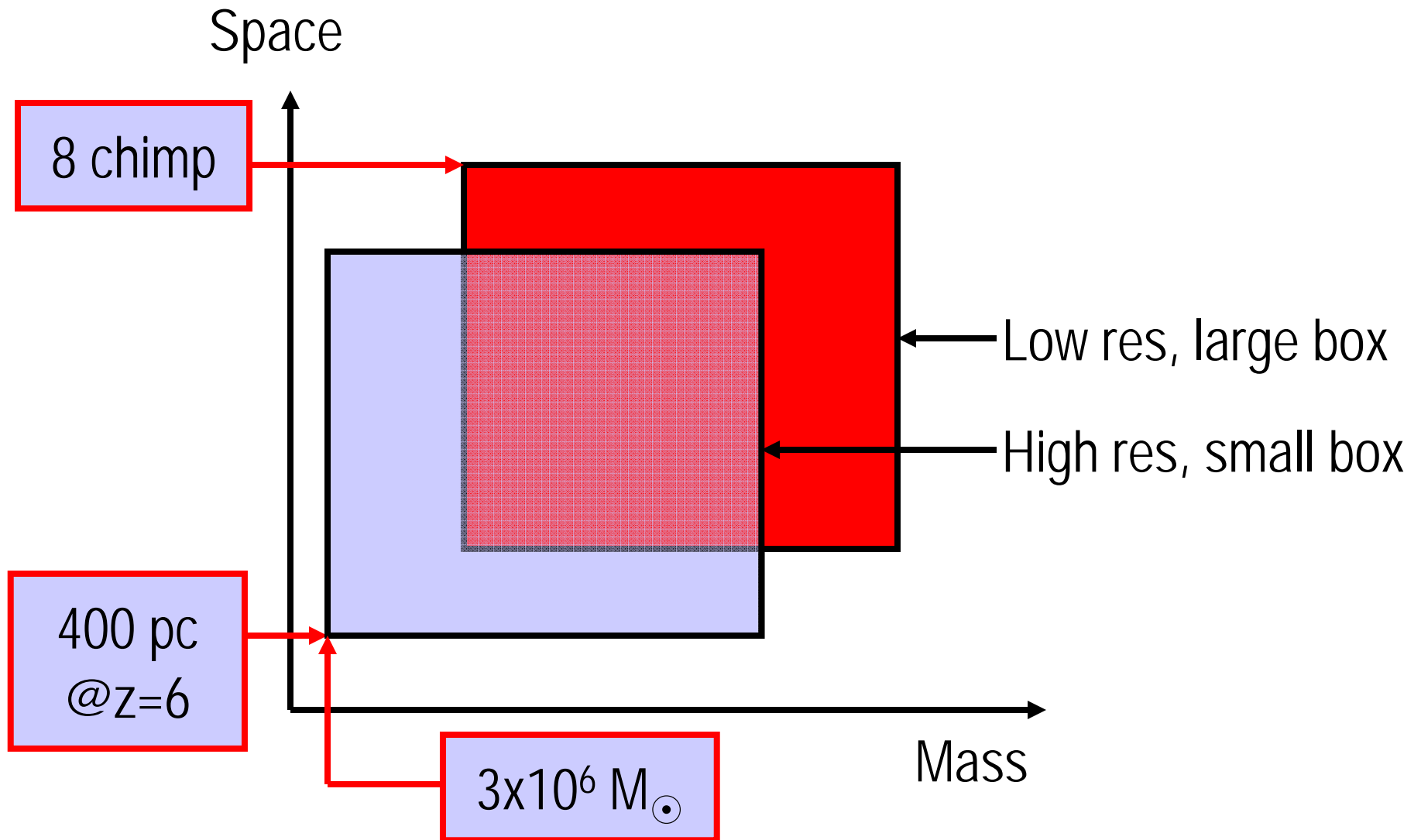
# Balancing the Books



(Bunker et al. 2004)



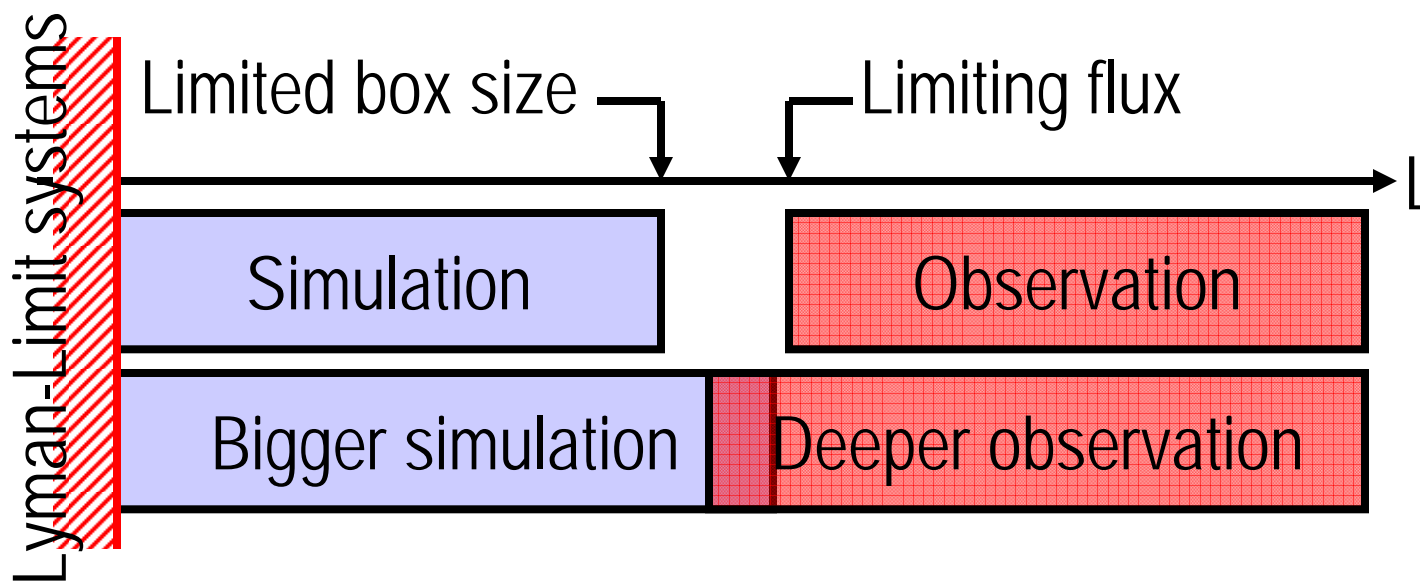
# Simulations





# Numerical Challenges

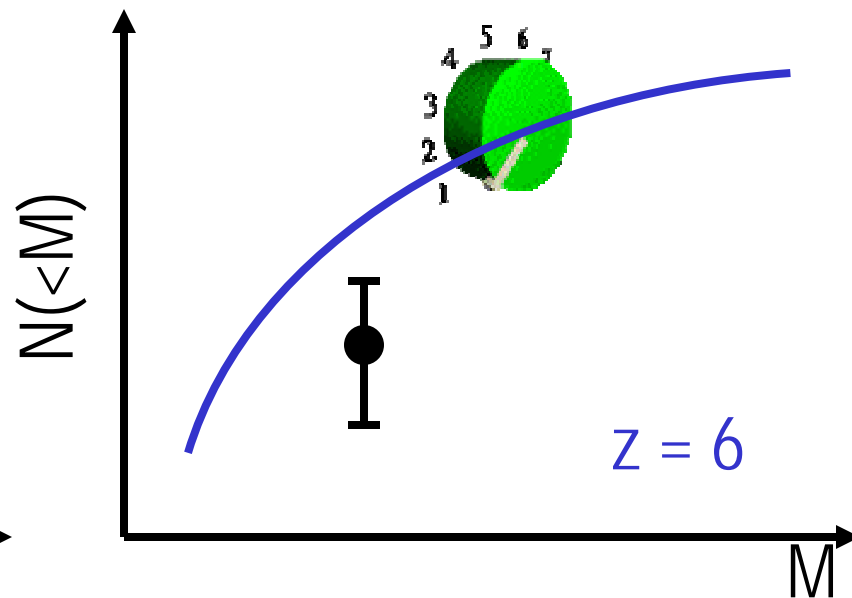
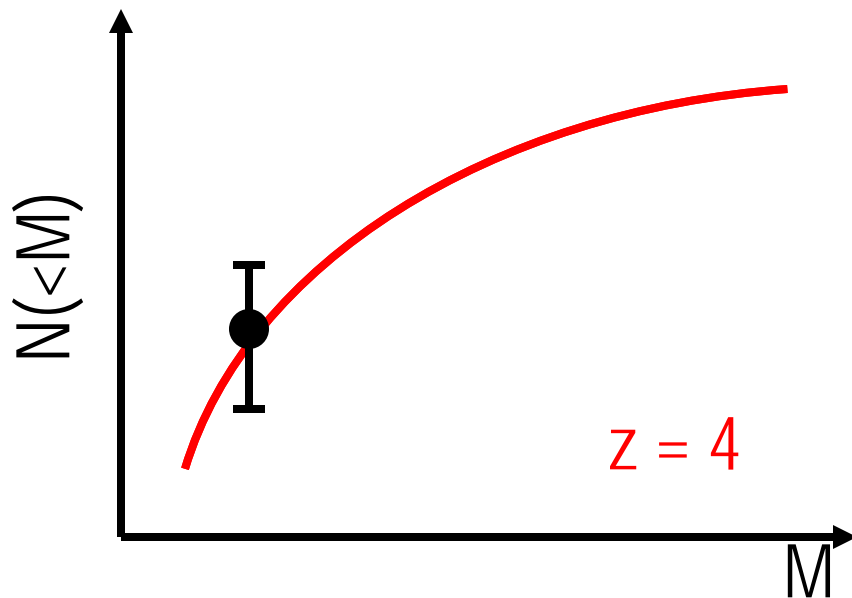
- Enough resolution to do reionization right (resolving Lyman-limit systems)
- Enough volume to model observable (i.e. bright enough) galaxies



# We Do Not Know Everything

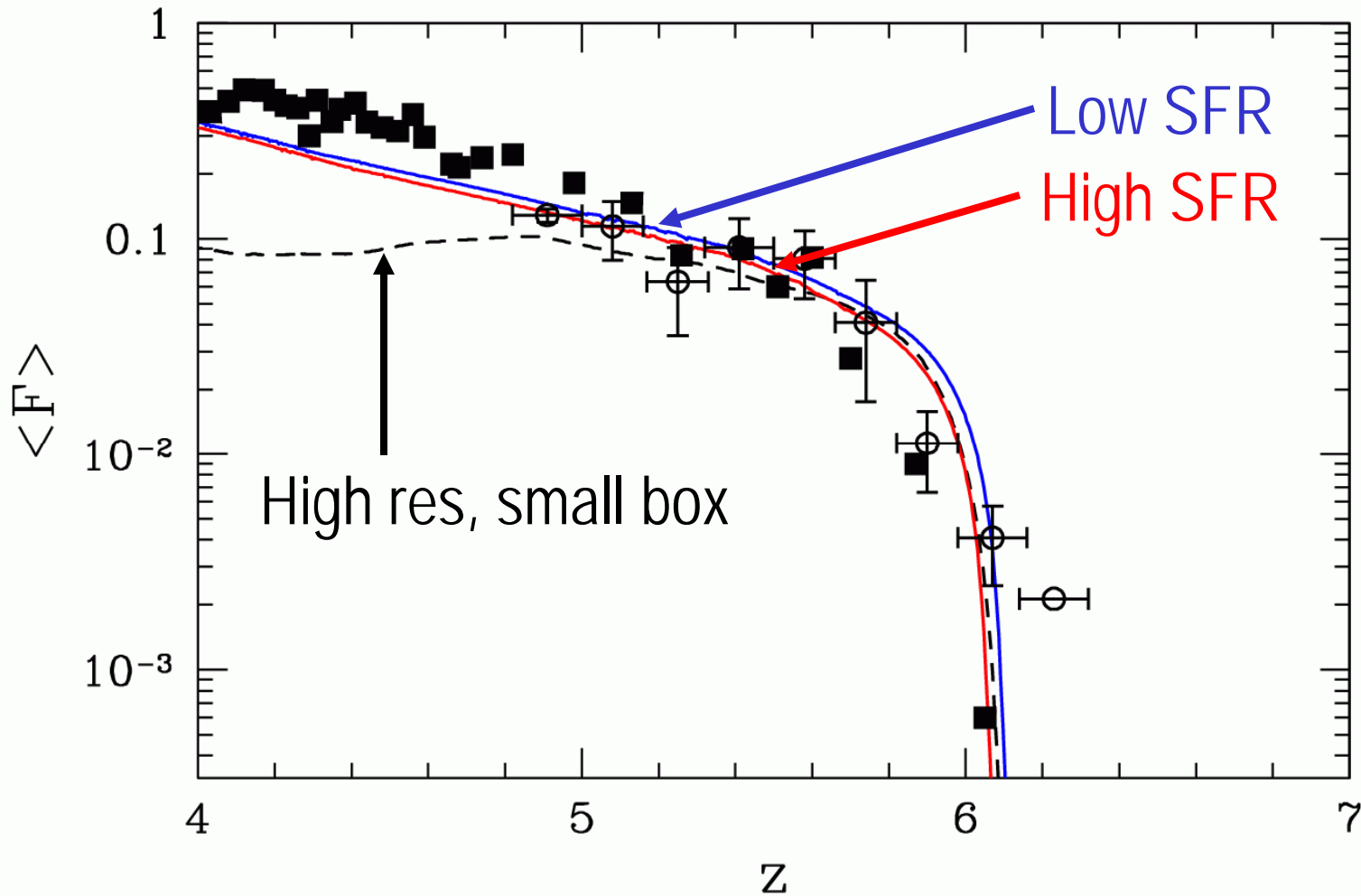


The real test for a simulation is to fit *two* luminosity functions at two *different* redshifts *simultaneously!*  
Free parameter: Star Formation Efficiency



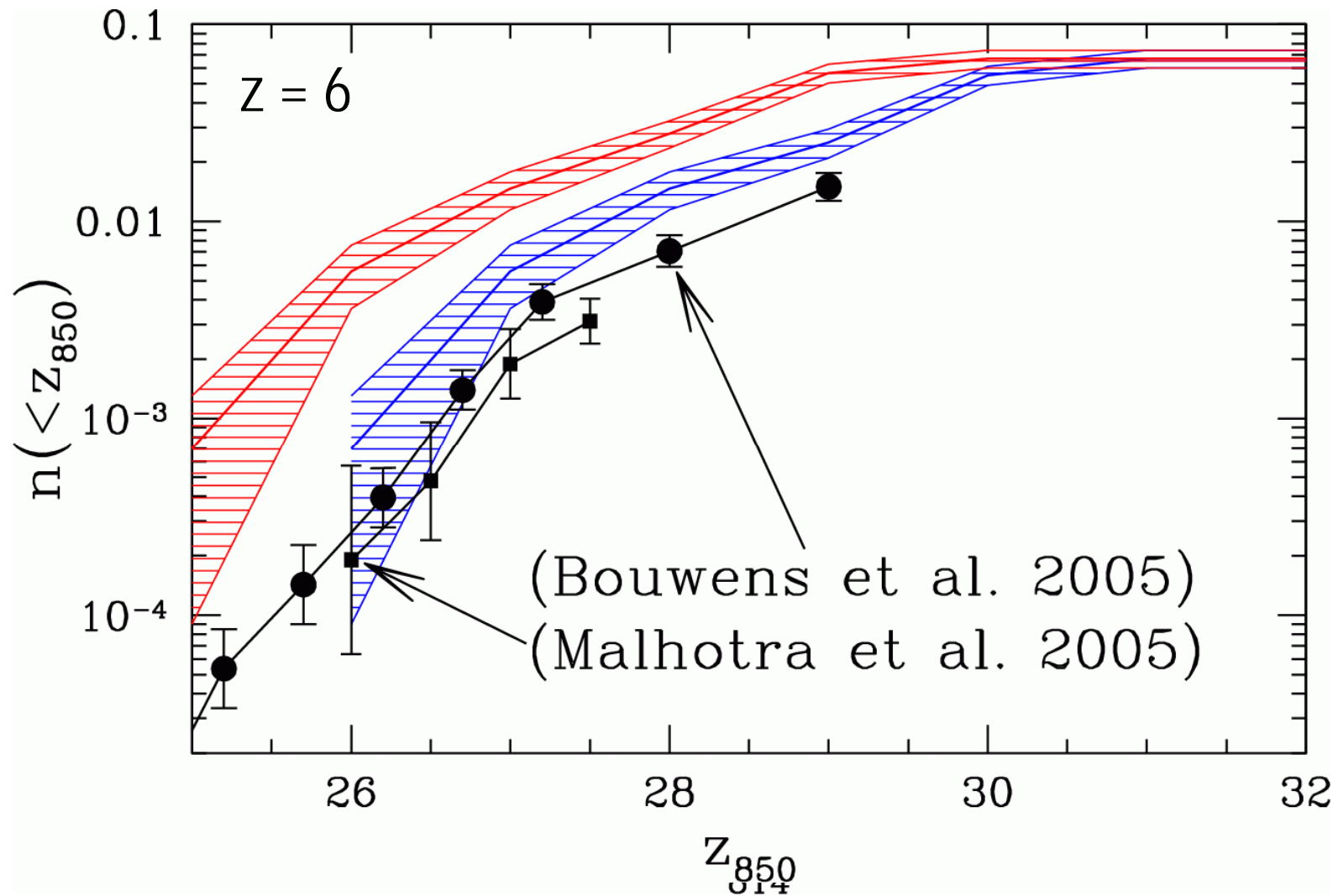


# ✓ Reionization?





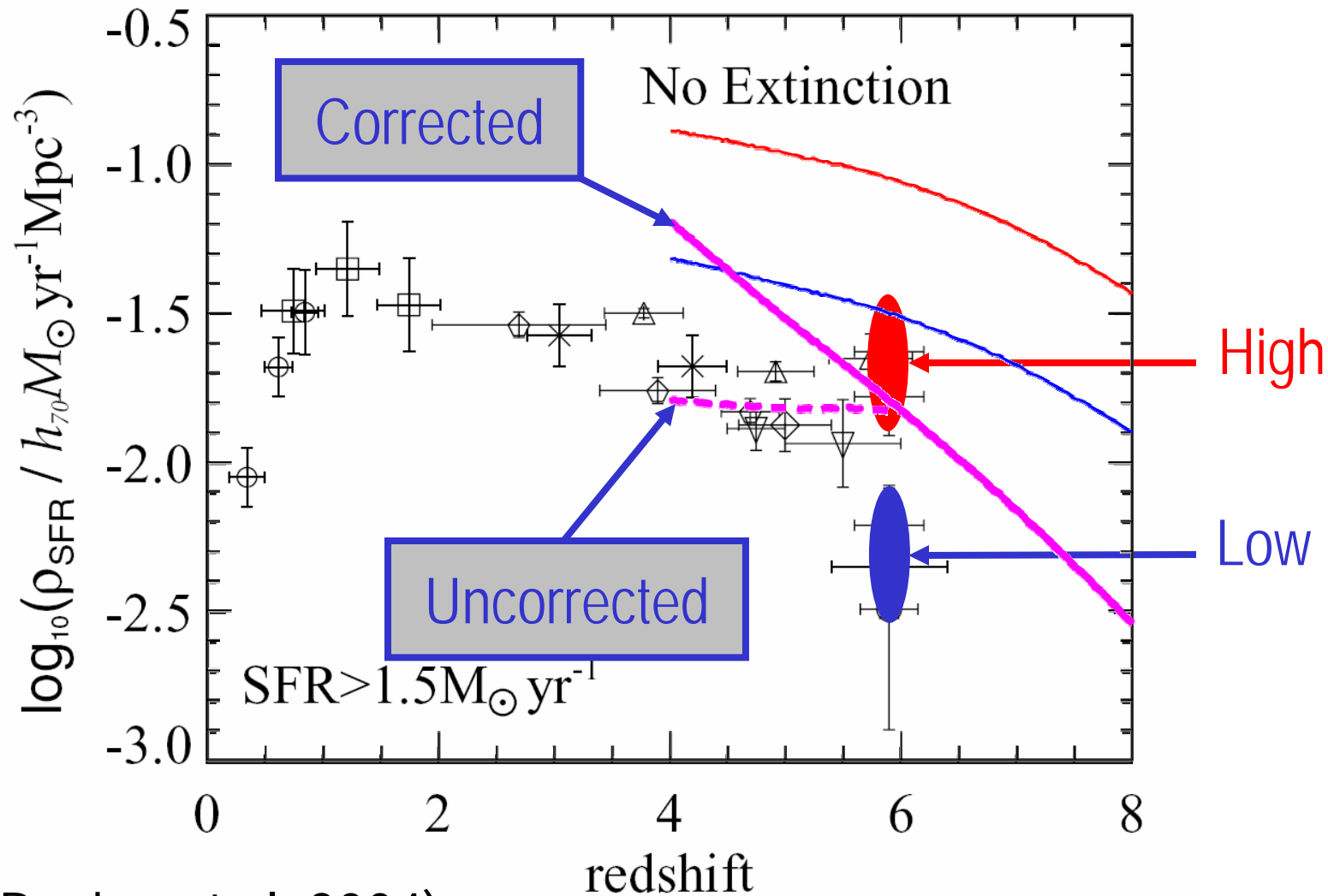
# ✓ Luminosity Functions







# ✓ Balancing the Books



(Bunker et al. 2004)



# Conclusions

- Simulations of reionization are consistent with the “high” value of SFR at  $z \sim 6$  ( $\sim 0.02 M_{\odot}/\text{Mpc}^3/\text{yr}$ ).
- Simulations are not consistent with the “low” value ( $\sim 0.005 M_{\odot}/\text{Mpc}^3/\text{yr}$ ).
- Our simulations have barely enough resolution to make this claim. They need to be confirmed by better ones.



The End





# Title