(f)Quasar Luminosity Functions in Host Halo Mass bins All SMBHs  $13 < \log M_{
m peak} < 14$  $11 < \log M_{
m peak} < 12$  —  $14 < \log M_{
m peak} < 15$  $12 < \log M_{
m peak} < 13$  $\frac{N}{10^{-10}}$ z = 5.0 $10^{48}$  $10^{43}$  $10^{47}$  $10^{44}$  $10^{46}$  $10^{45}$ Bolometric Luminosity [ergs s<sup>-1</sup>]

 $dex^{-1}$ 

Density [Mpc