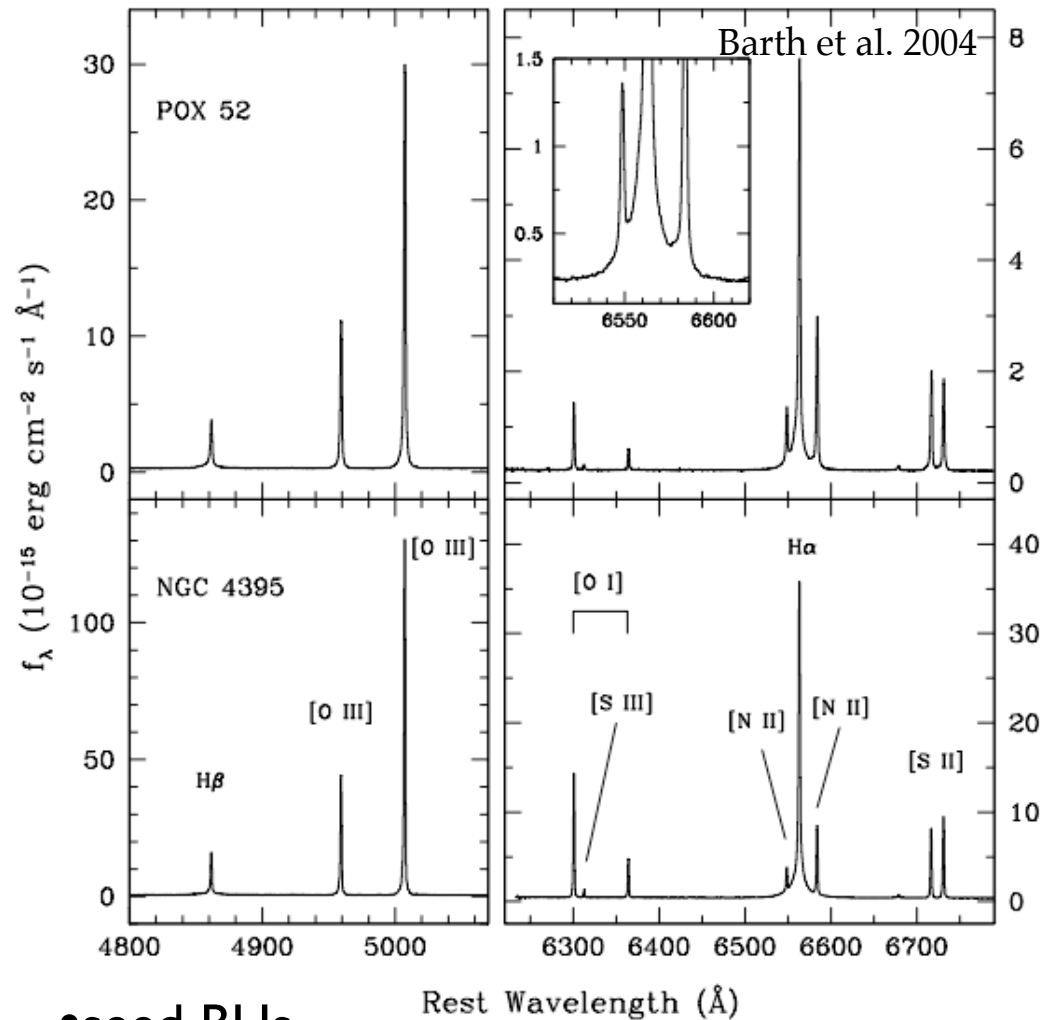
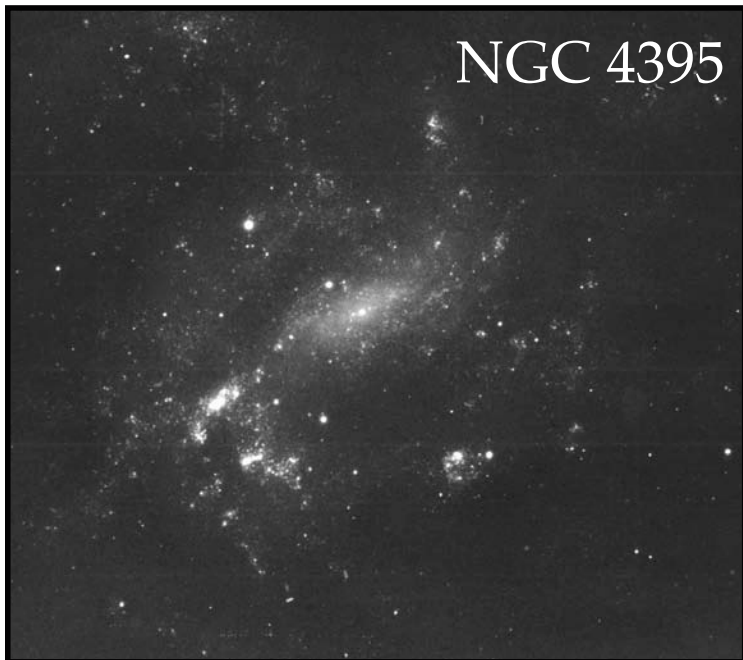
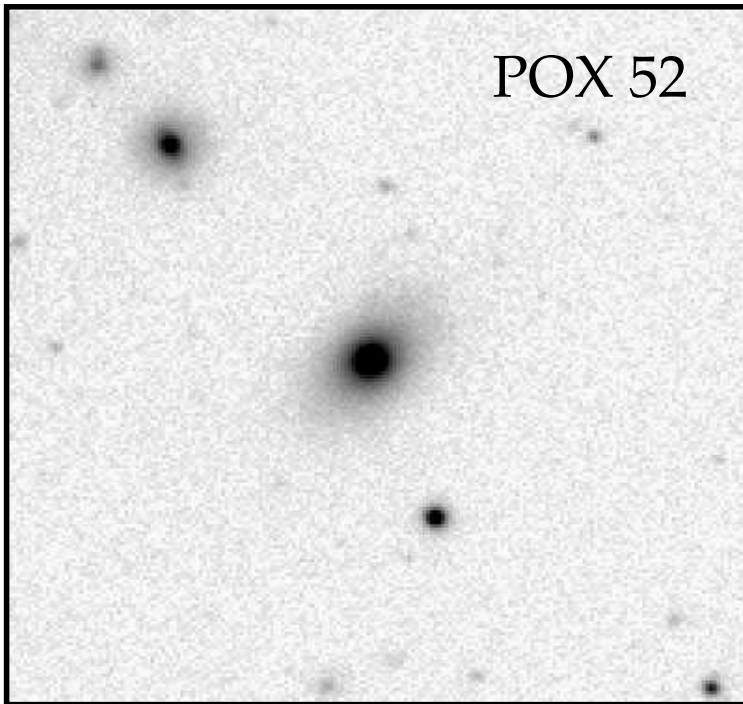


# Science Cases for DEX

jenny greene, speaking in the wrong session

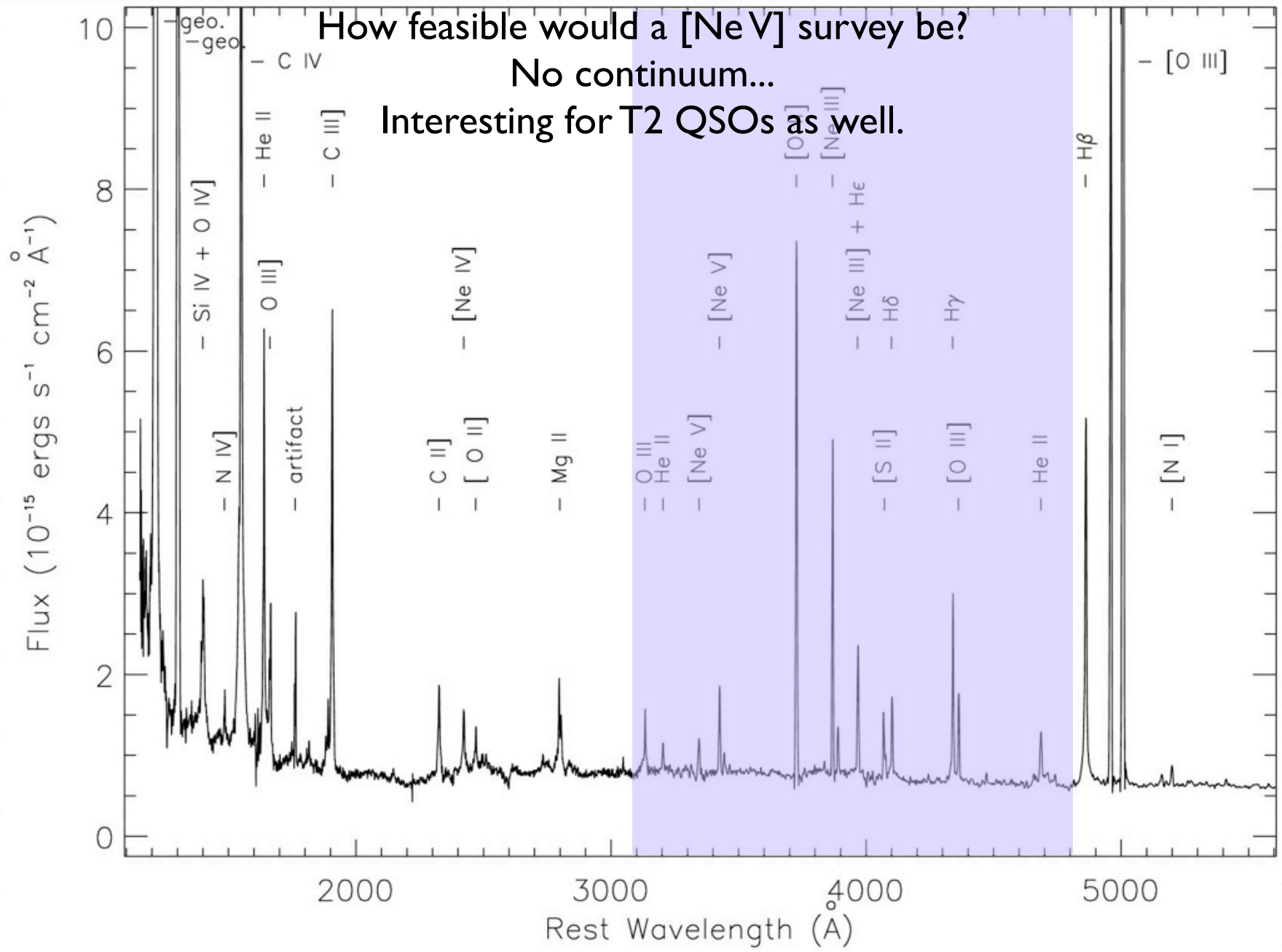


- seed BHs
- shape of BH-bulge relations at low mass
- accretion properties at low mass

**HETDEX way better than SDSS**

# Expected # of POX 52s in HETDEX

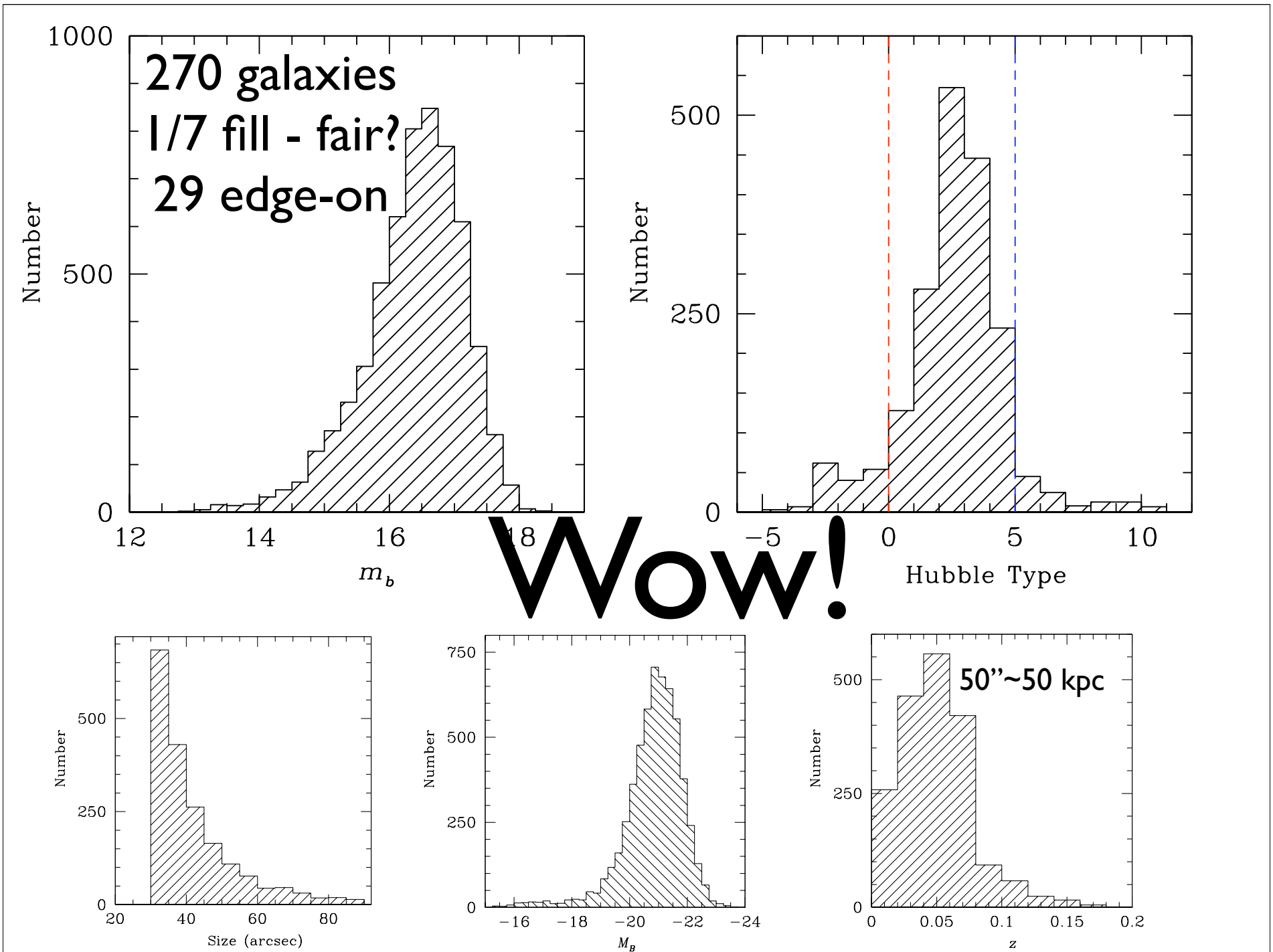
- Volume is just barely large enough
- We can just make it to  $z \sim 0.1$  and keep [OIII]
- Gives an expected number of  $\sim 10$ , assuming space density  $\sim 3 \times 10^{-5} \text{ Mpc}^{-3}$  (factor of 2 from parallel mode would make a big difference here)
- More ambitious...use [Ne V]  $\lambda 3426$  - really only doubles expected number



How feasible would a [Ne V] survey be?  
 No continuum...  
 Interesting for T2 QSOs as well.

# (Not So) Nearby Galaxies

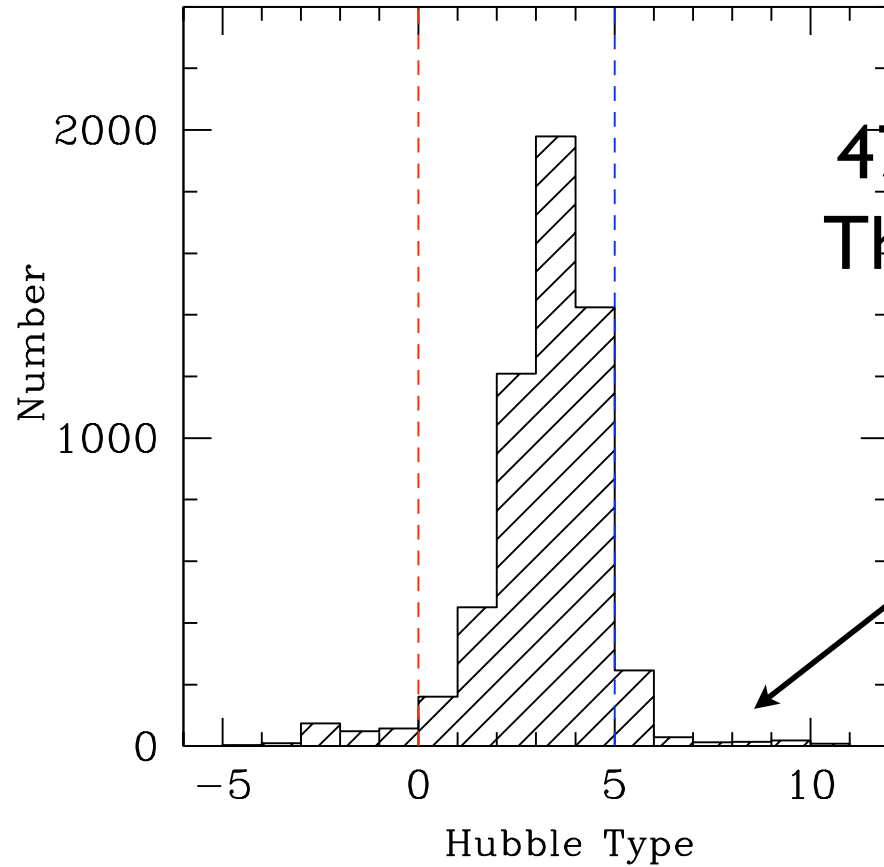
- The following thought experiment: How many galaxies in the DEX field are 'resolved'
- In practice, take  $D_{25}$  of 30''(20'')-90''
- Started with HyperLeda, in the DEX field



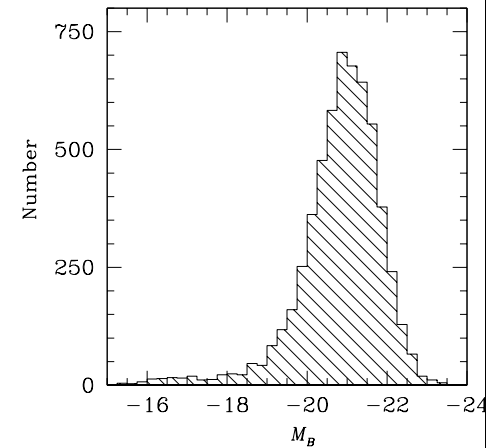
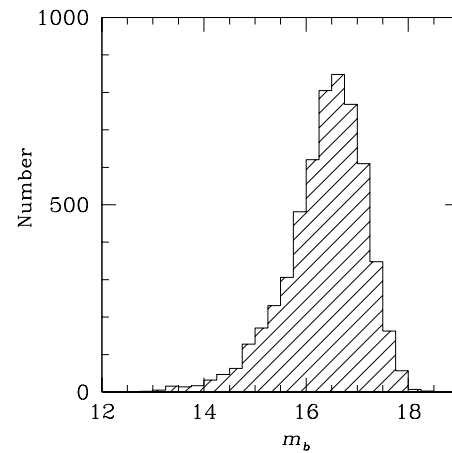
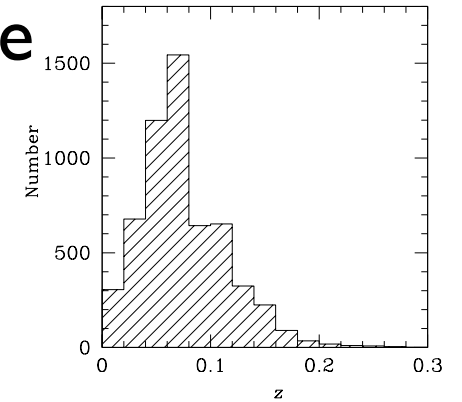
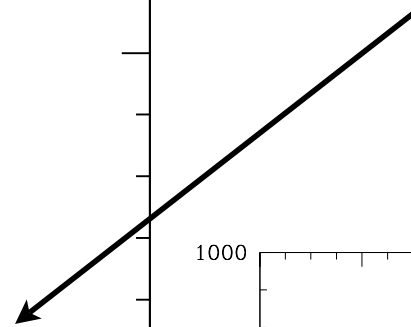
# Really Fun

- Metallicity gradients, in gas and stars
- Different stellar populations in bulges, pseudobulges, bars
- Kinematics and spatial extent of gas, to sensitive limits
- no stellar kinematics with this spectral resolution (anything we can do about that?)
- any way to put galaxies in the 9 filled-square area?
- Worth considering high-res/H $\alpha$  follow-up with VIRUS-P?

# Total of 820 galaxies with $D_{25} > 20''$



**47 late-type spirals**  
**This WAY beats the**  
**Palomar survey**





# Also Low-Level Accretion

- AWESOME galaxy subtraction
- No  $H\alpha$ ...but that might be ok. Should be quite sensitive to broad  $H\beta$  (but I need to go through numbers)
- for low-mass galaxies, we would follow-up everything with really high-ionization emission line nuclear spectra or [Ne V]

# Summary

- Could be interesting to find low-mass BHs/  
place much more stringent limits on their  
space density
- HETDEX survey itself will provide a really  
interesting (nearby) galaxy sample