

# A Reflection and Perspectives of an Observer

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Galaxies in Isolation: Nature vs. Nurture  
(May 15, 2009; Granada, Spain)

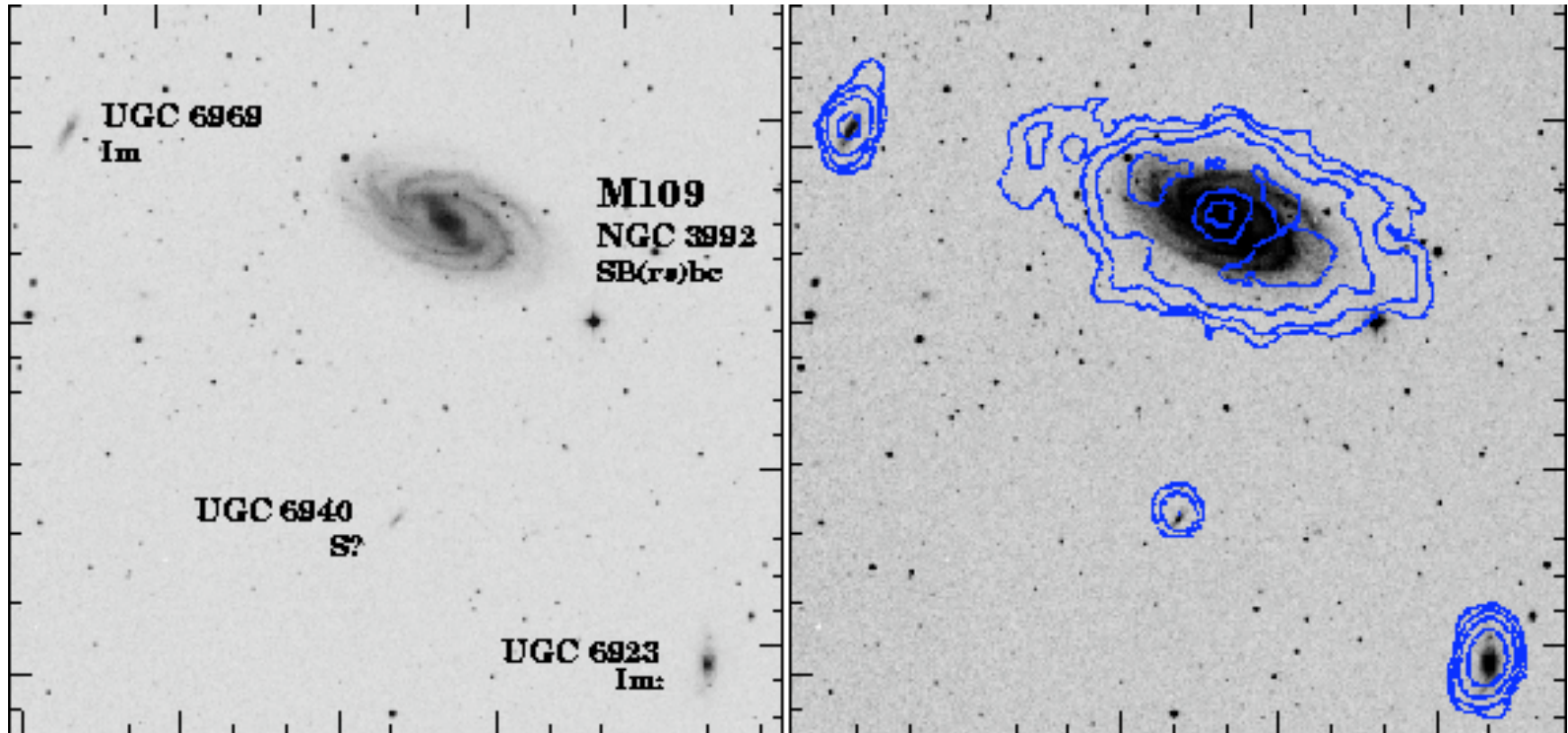
# What is an Isolated Galaxy?



CDM says....

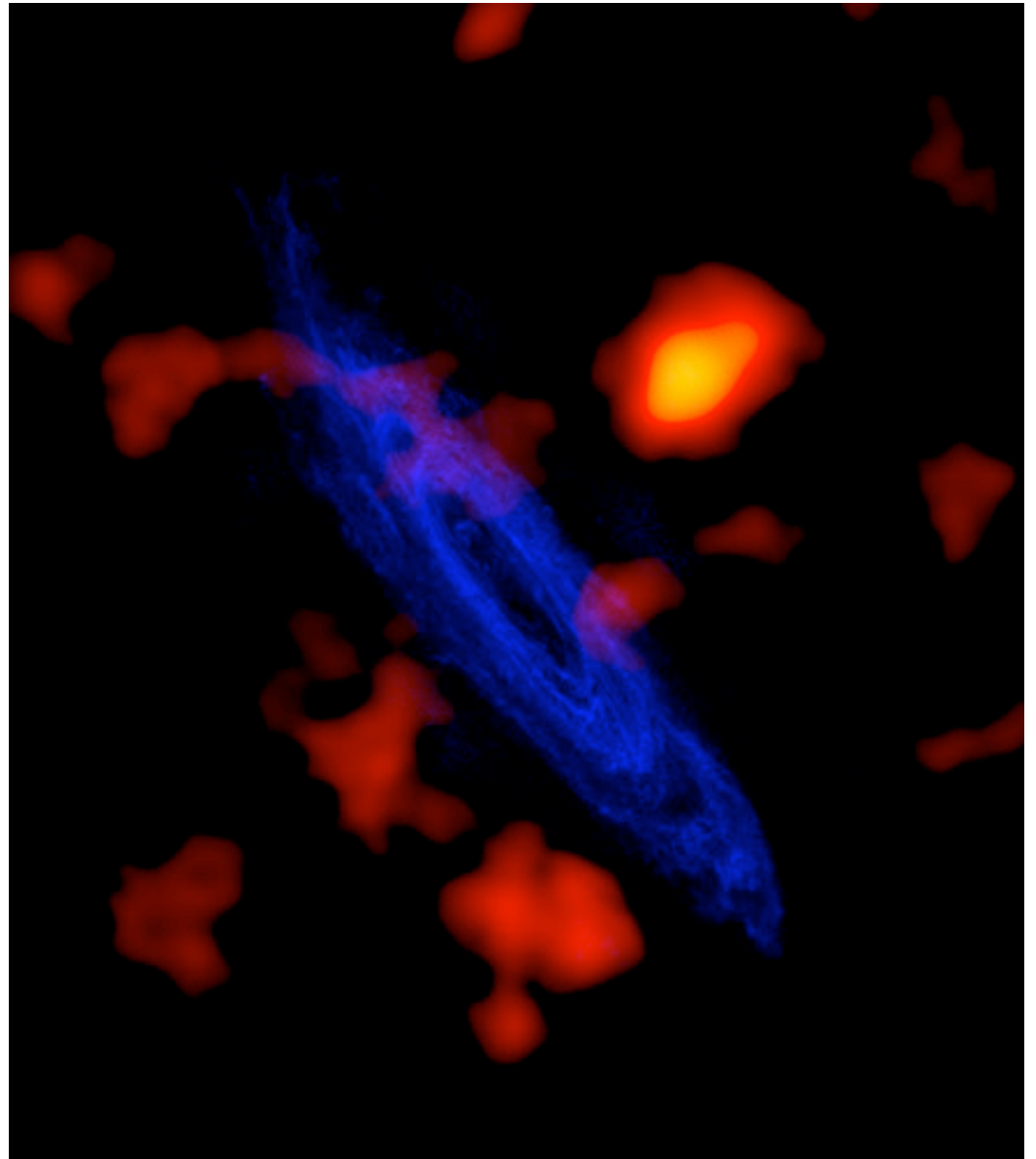
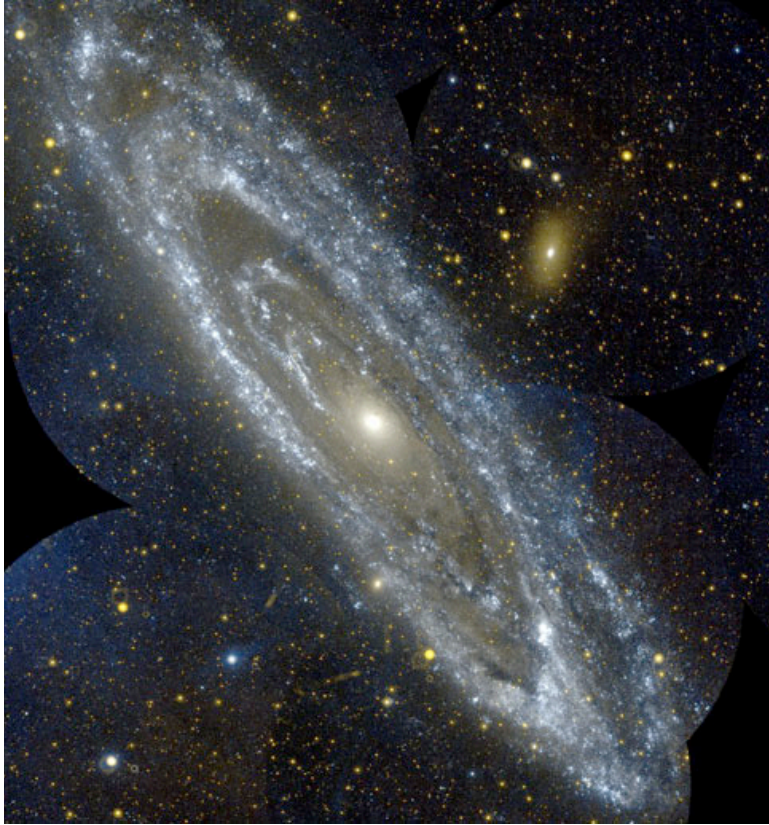


# 21cm HI Data



Lee & Irwin (1997)

# M31



GBT + WSRT (Thilker et al.)

# 21cm HI Surveys

- Identify “invisible” galaxies
  - LSBs ([Verlay](#), survey in z-space; [Herrera](#))
  - Mosquitoes ([Giovanelli](#), [Koribalski](#) ;also “H- $\alpha$  dots”  
[Brosch](#))
- Tidal disruption history
  - asymmetry and energetics ([Sulentic](#), [Espada](#),  
[Wilcots](#))
  - dark galaxies

# Do mosquitoes matter?



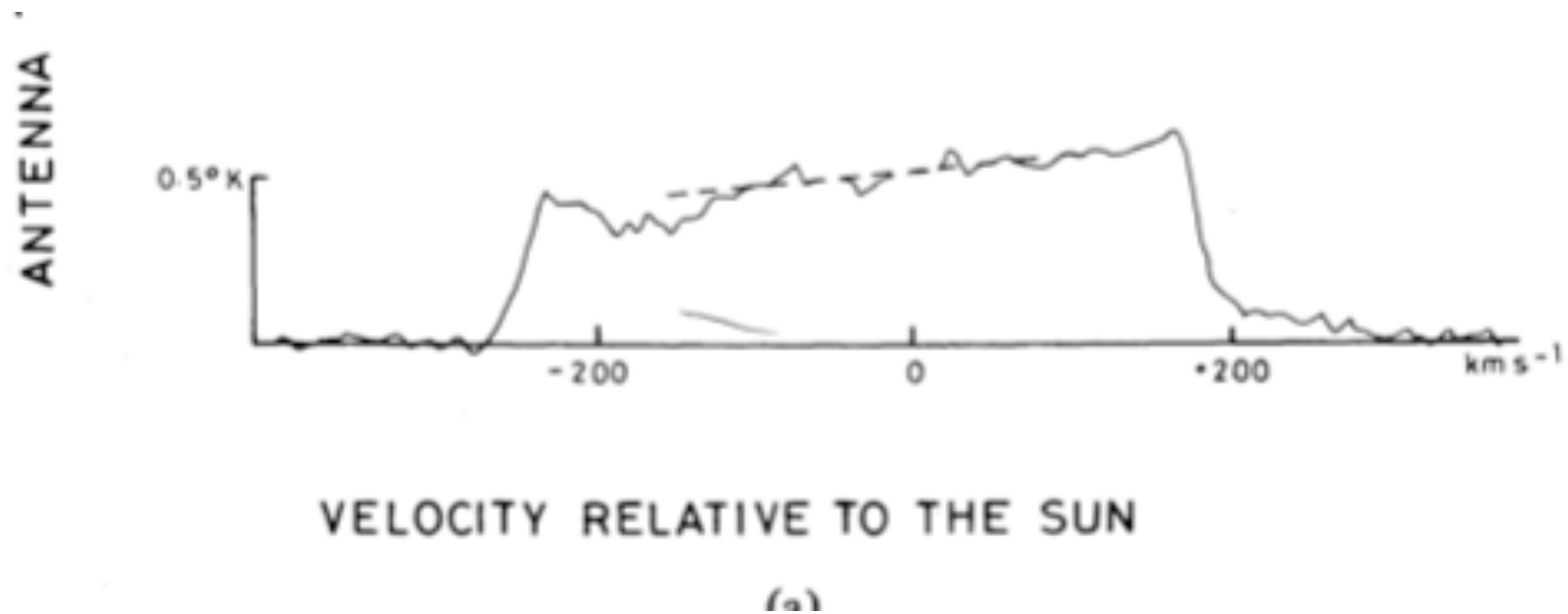
might have said  
~~Lia says~~ Resonance kills...



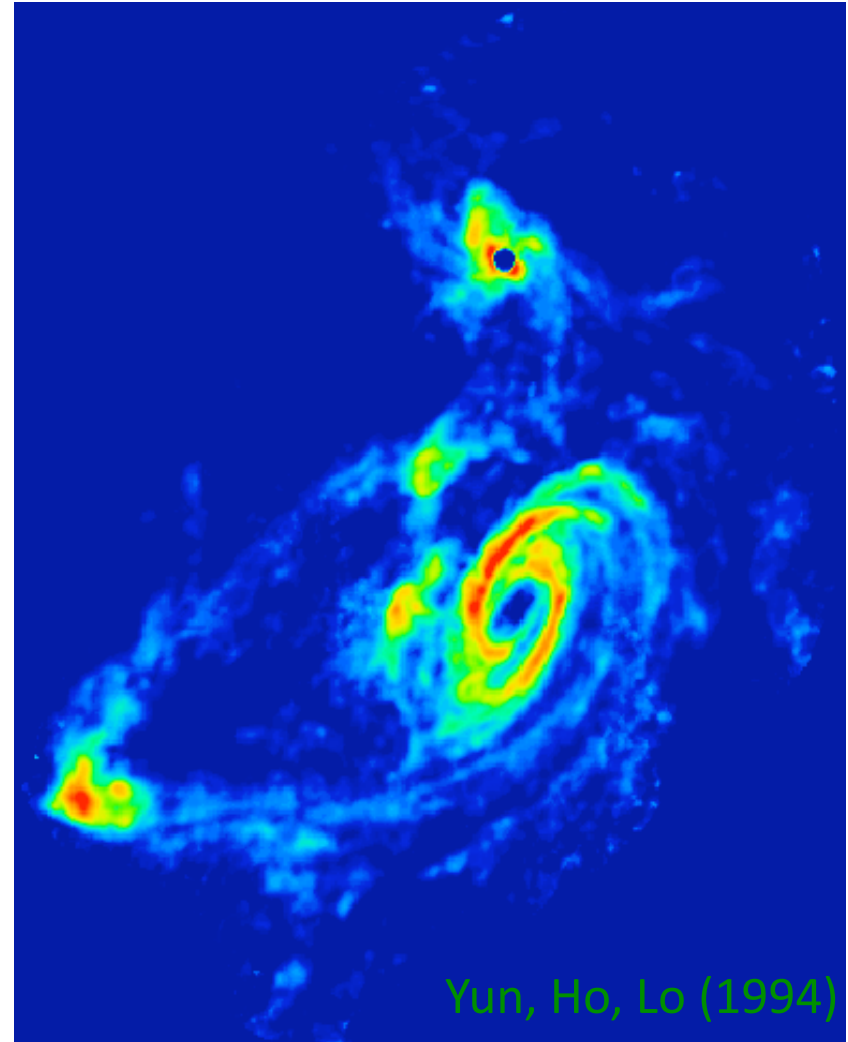
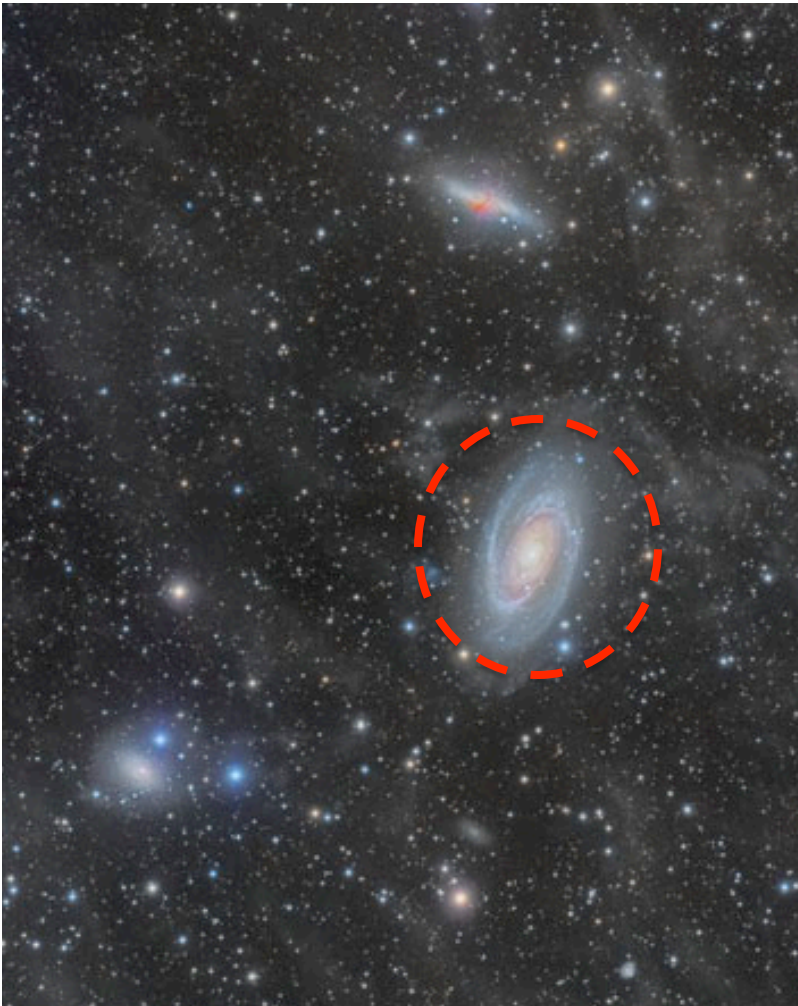
$$Q_D = (M_{\text{neighbor}}/M_{\text{galaxy}})/(R_{\text{sep}}/R_{\text{galaxy}})^3$$



# Cautionary Tale #1: Symmetry and Isolation

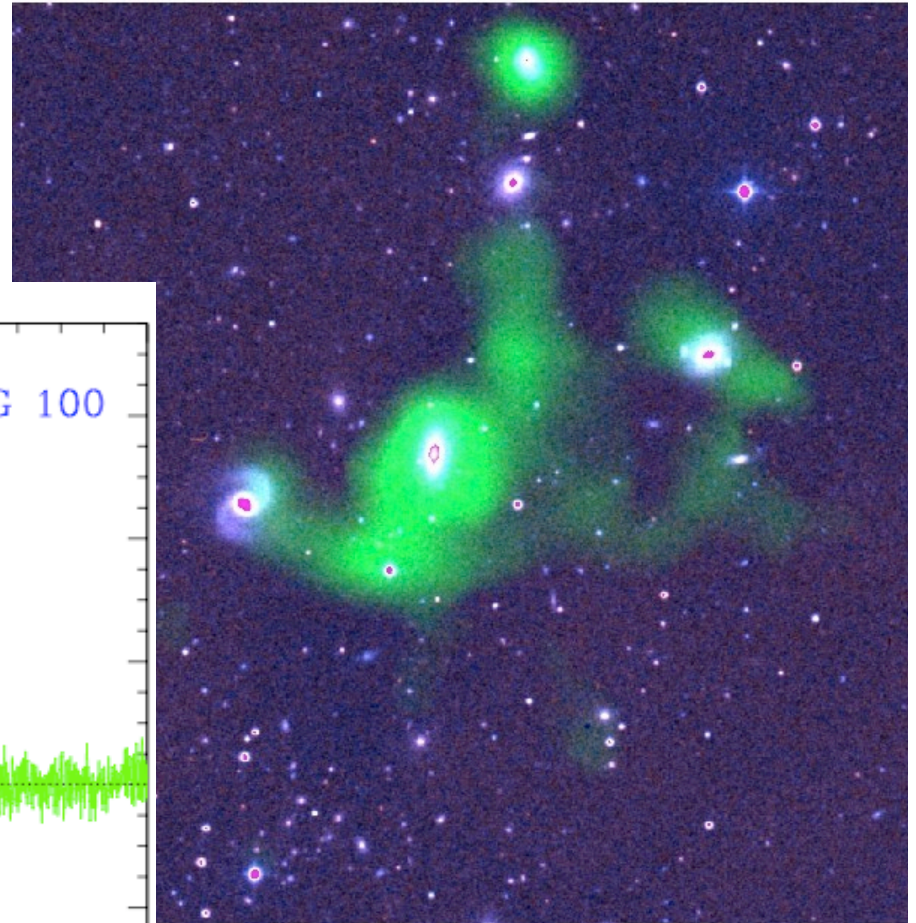
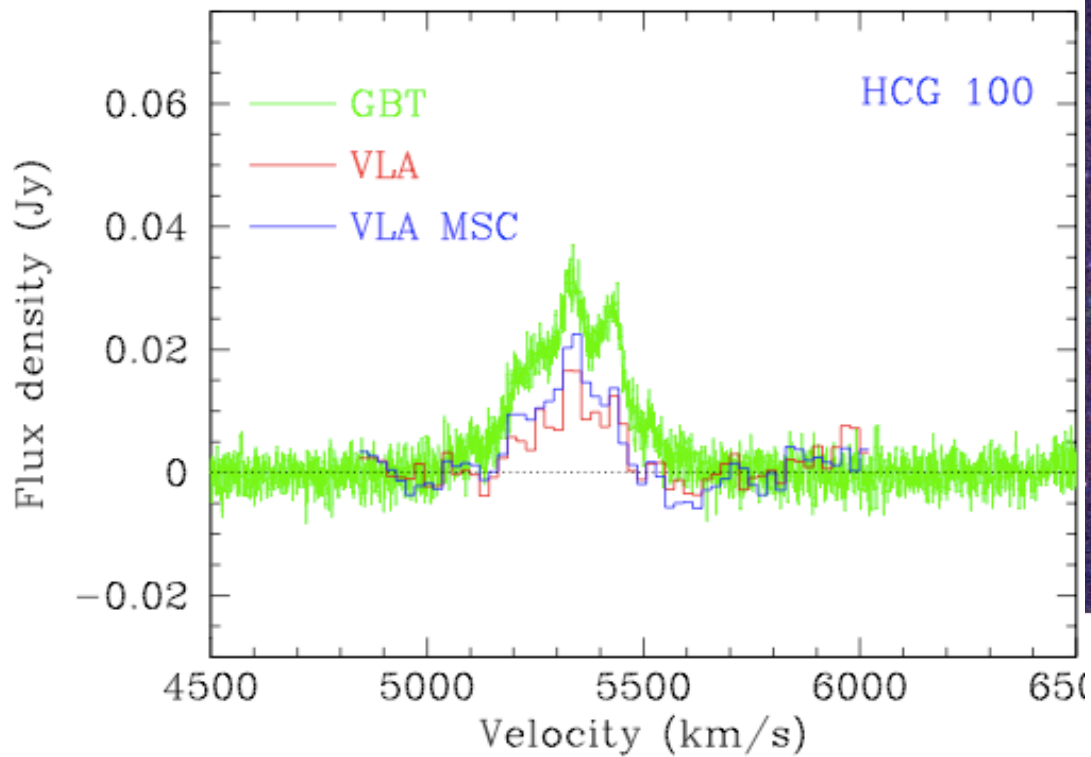


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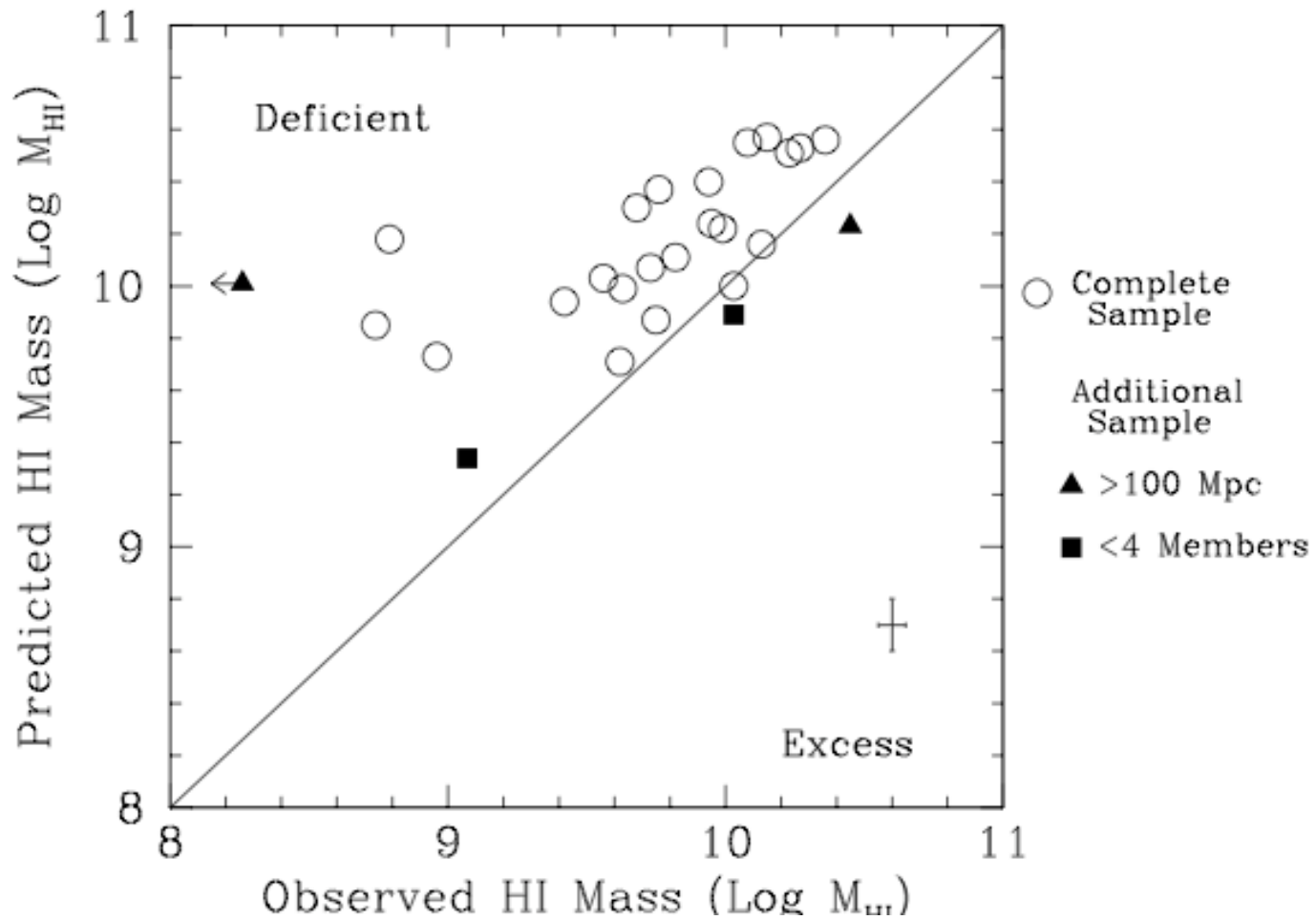


# Cautionary Tale #2: Intergroup Medium

Borthakur, Yun, Verdes-Montenegro,  
in prep.

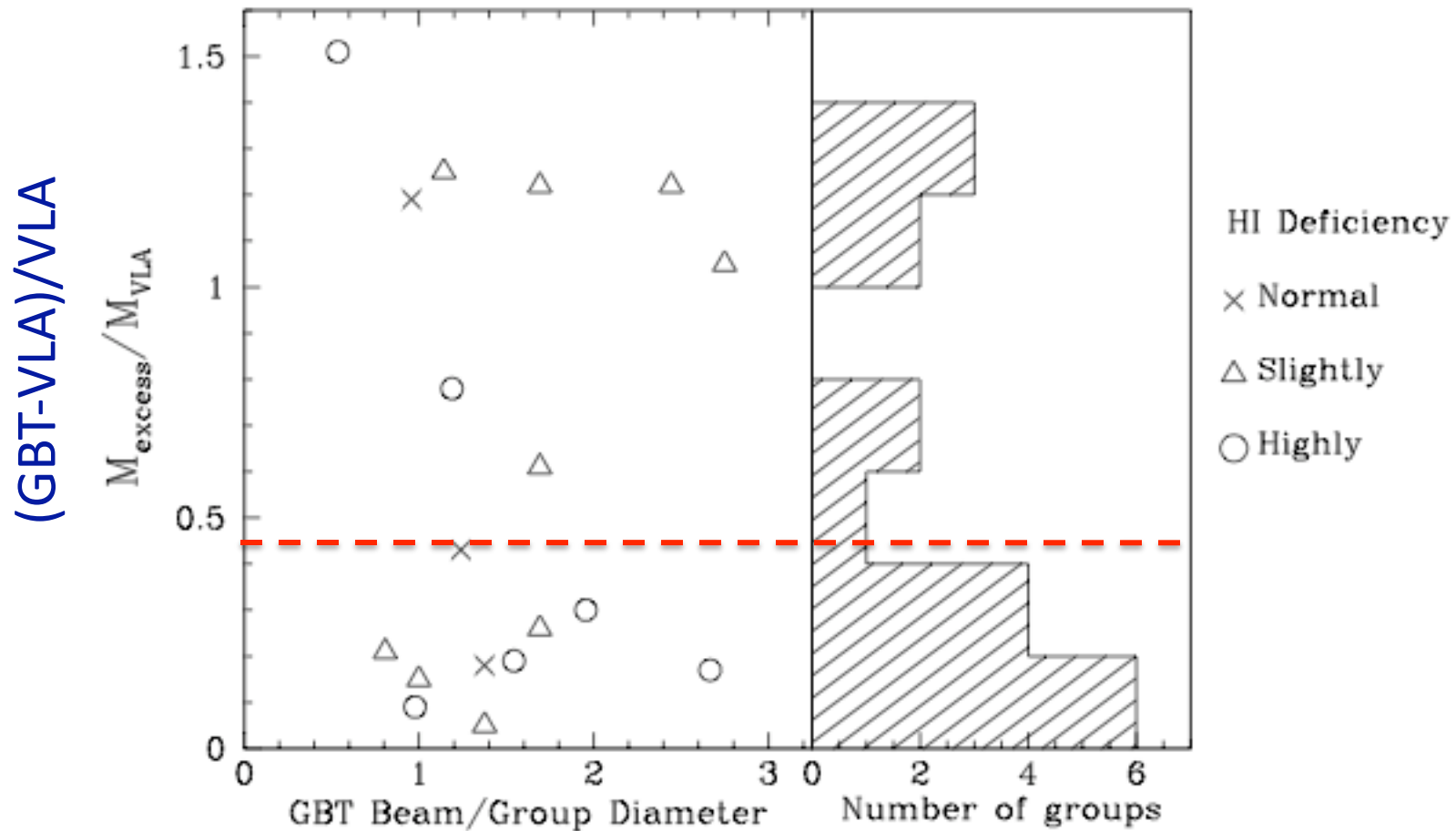


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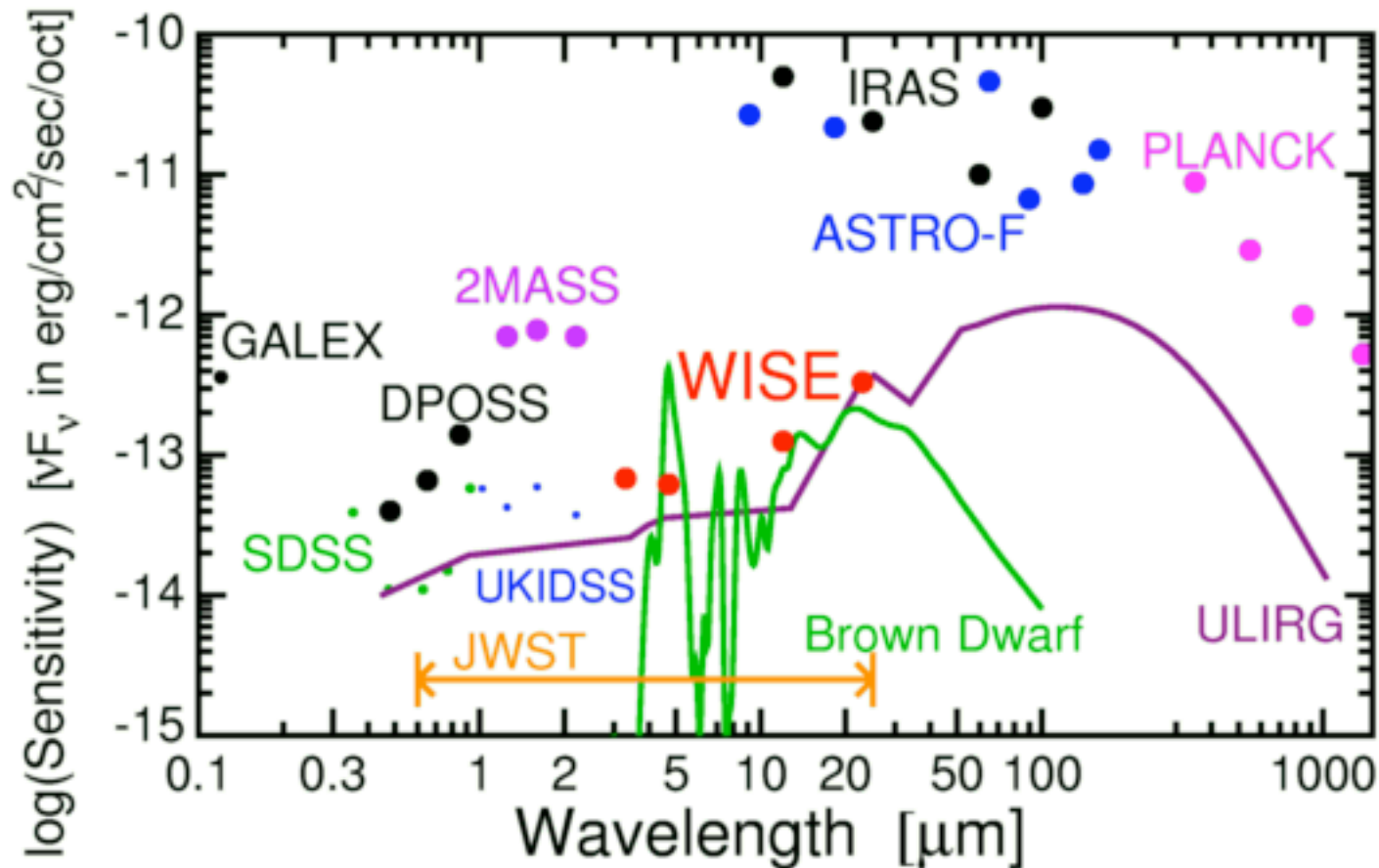
# Future Surveys

# 21cm HI Surveys

- ALFALFA (2005-2011?)
- EVLA (2010)
  - 65,536 channels @1 km/s resolution
- Apertif/WSRT, MEERKAT, ASKAP

# Wide-Field Infrared Survey Explorer (WISE; 2009)

- All sky survey at 3.3, 4.5, 12, and 23  $\mu\text{m}$  ( $\theta=6\text{-}12''$ )
- 500x better sensitivity than IRAS & Akari





# Other Surveys & Facilities

- Herschel (2009) ??
- Warm Spitzer (2009-??)
- SDSS3 (2008-2014)
- Pan-STARRS (PS1 in 2008; PS4??)
- LSST (2016)
  
- LMT (2010)
- ALMA (2012)

2008 Great Surveys Workshop (<http://t8web.lanl.gov/people/salman/grsurveys/>)

# Sample Selection

- Multi-wavelength database (HI, IR, optical,...)
- 2D/3D selection functions (isolated, groups)
  - Human vs machine ([Sulentic](#))
  - Mass or mass ratio? ([Koribalski, Wilcots](#))
  - Redshift mapping and interlopers ([Spector](#))
  - characterize selection completeness/biases ([Santander-Vela, Croton, Perez, McConnachie, Iovino, Mamon, et al.](#)) – SAM useful but use with care!

# Questions to Ponder Further...

- What is an isolated galaxy? In the context of the hierarchical model,
  - What questions to ask?
  - How to define sample
- Nature or Nurture?
  - Shouldn't we be more specific, to make any real progress?



Hasta luego!

