

Rotation Curve Kinematics of Galaxies in the GOODS-N Field

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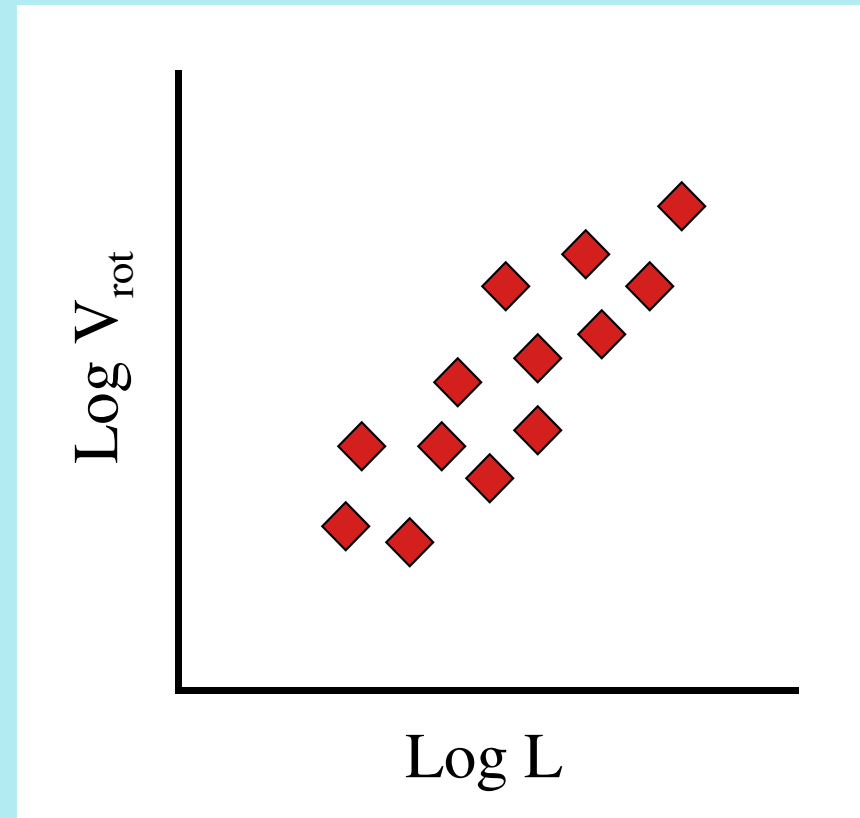
**DEEP
collaboration**

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low-z expert

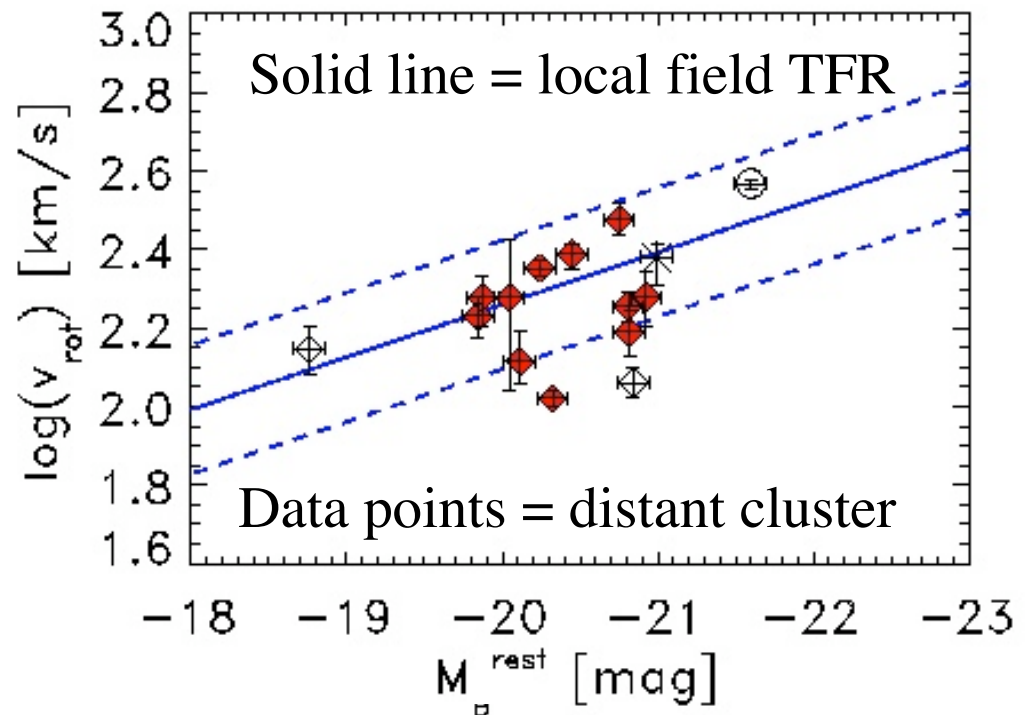
Kinematics as Evolutionary Diagnostic

- **Tully-Fisher relation: comparison of disk galaxy M/L**
- **Zeropoint:** luminosity evolution
- **Slope:** mass-segregated evolution
- **Scatter:** stellar populations, star formation histories



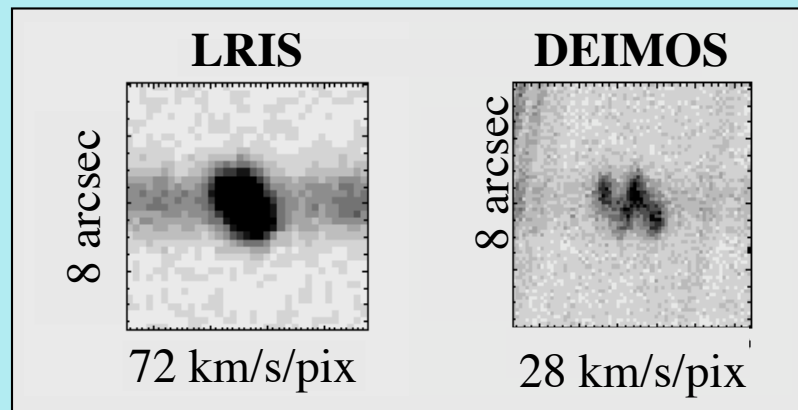
Tully-Fisher Evolution: Current Status

- Several studies show 0.5 mag luminosity evolution to $z=1$ (e.g. Vogt et al. 1996, 1997)
- Others find 2 mag evolution by $z=0.5$ (Rix et al. 1997, Simard et al. 1998)
- Small samples and selection may be an issue (Ziegler et al. 2002)



GOODS-N Dataset

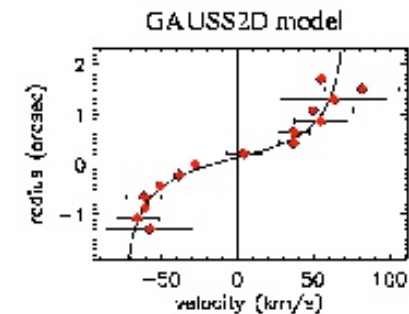
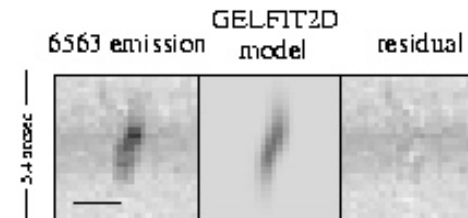
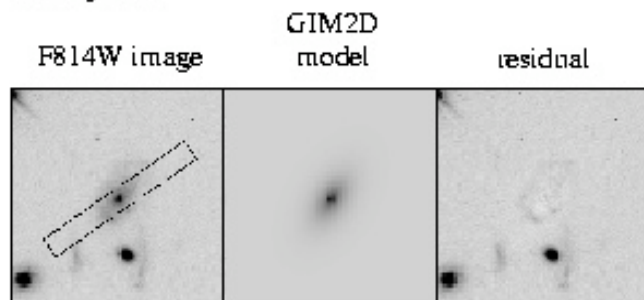
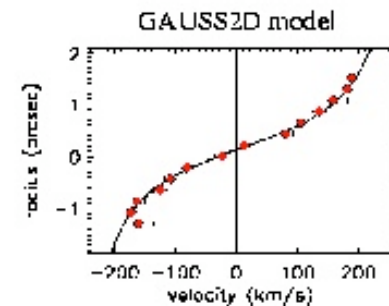
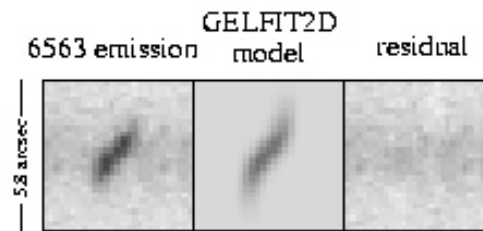
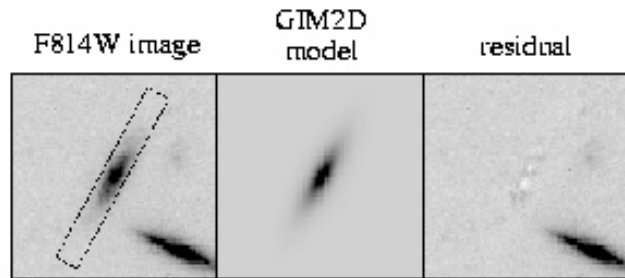
- Spectroscopy: **Keck Treasury Redshift Survey**
 - Keck + DEIMOS spectra of ~ 2000 objects with $R < 24.3$
 - Spectra being made public at this meeting!
 - Will provide redshifts, raw velocity measurements



- Imaging: **ACS survey images**
 - Will provide restframe luminosities, colors, inclinations, position angles

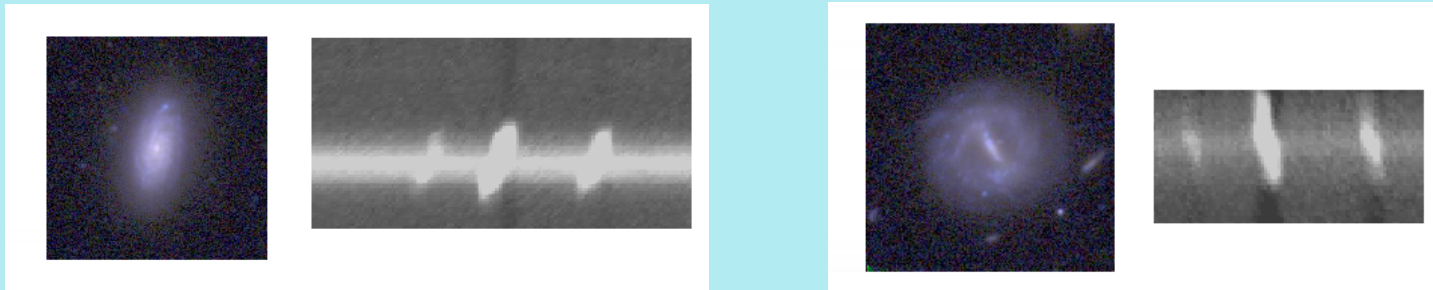
Distant Galaxy Rotation Curve Analysis

Need to account for seeing, instrumental blurring, orientation of galaxy with respect to slit



Probing the GOODS-N Kinematic Sample

- Goal is to select galaxies in 2-3 redshift bins using specific, identical criteria (color, luminosity)
- Compare samples internally and to identically-selected local sample

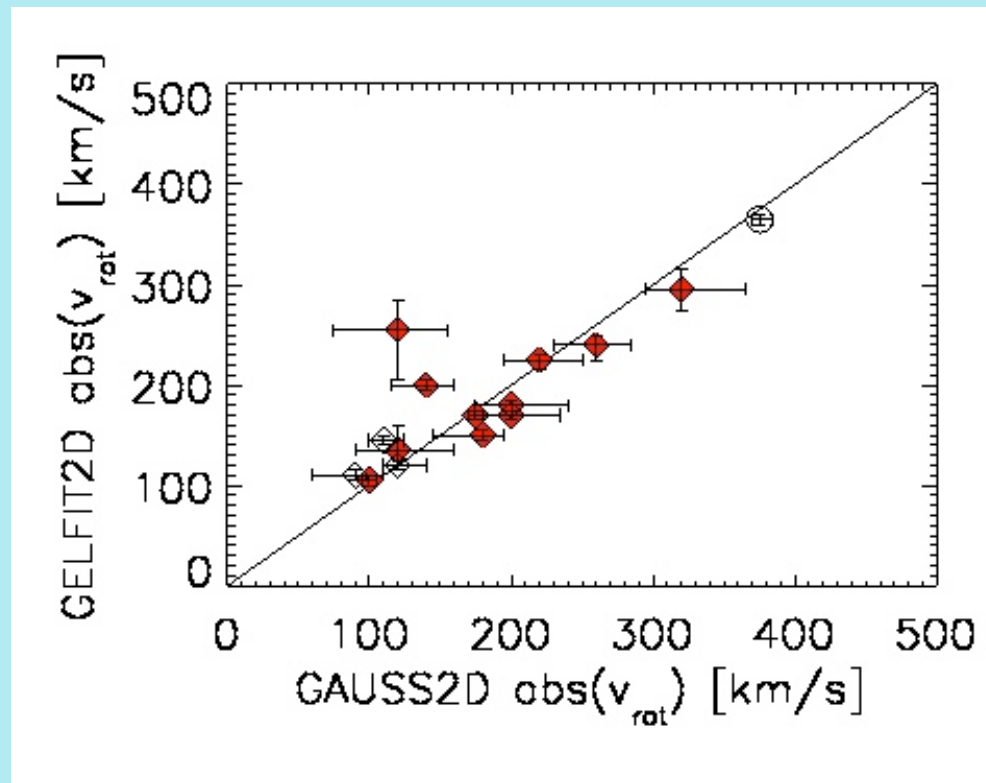


- Examined ~ 750 spectra, expect total sample of ~ 75 galaxies with $z < 0.6$

Further Topics to be Explored

- Extension to other density regimes: **groups, clusters**
- **Physical basis** of Tully-Fisher relation
 - Does gas fill a galaxy?
 - Do kinematic and morphological peculiarities correspond?
- **Redshifting local data** for comparison to distant galaxies with peculiar kinematics
- Comparing velocity measures from **rotation curves** and **linewidths**
- **IFU follow-up** spectroscopy: full 2D kinematics

Two Methods Compared



Very similar results!