The most complete photometric analysis of CALIFA galaxies

The Interplay Between Local and Global Processes in Galaxies

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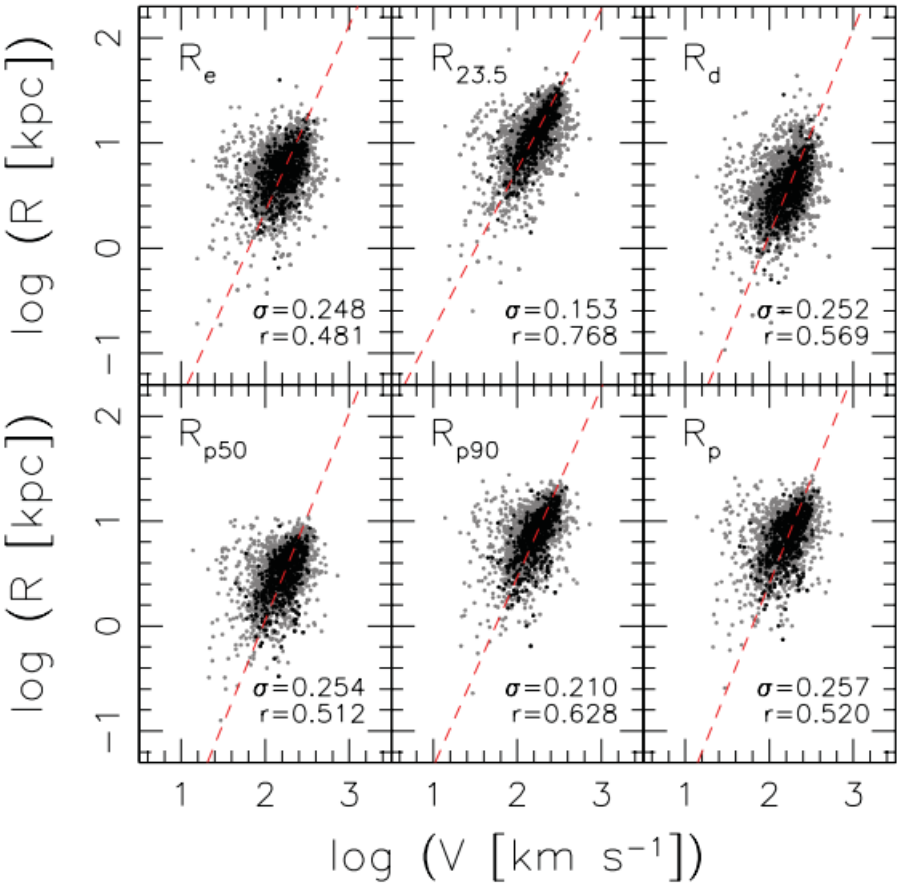
Uniform, reliable, extensive photometry



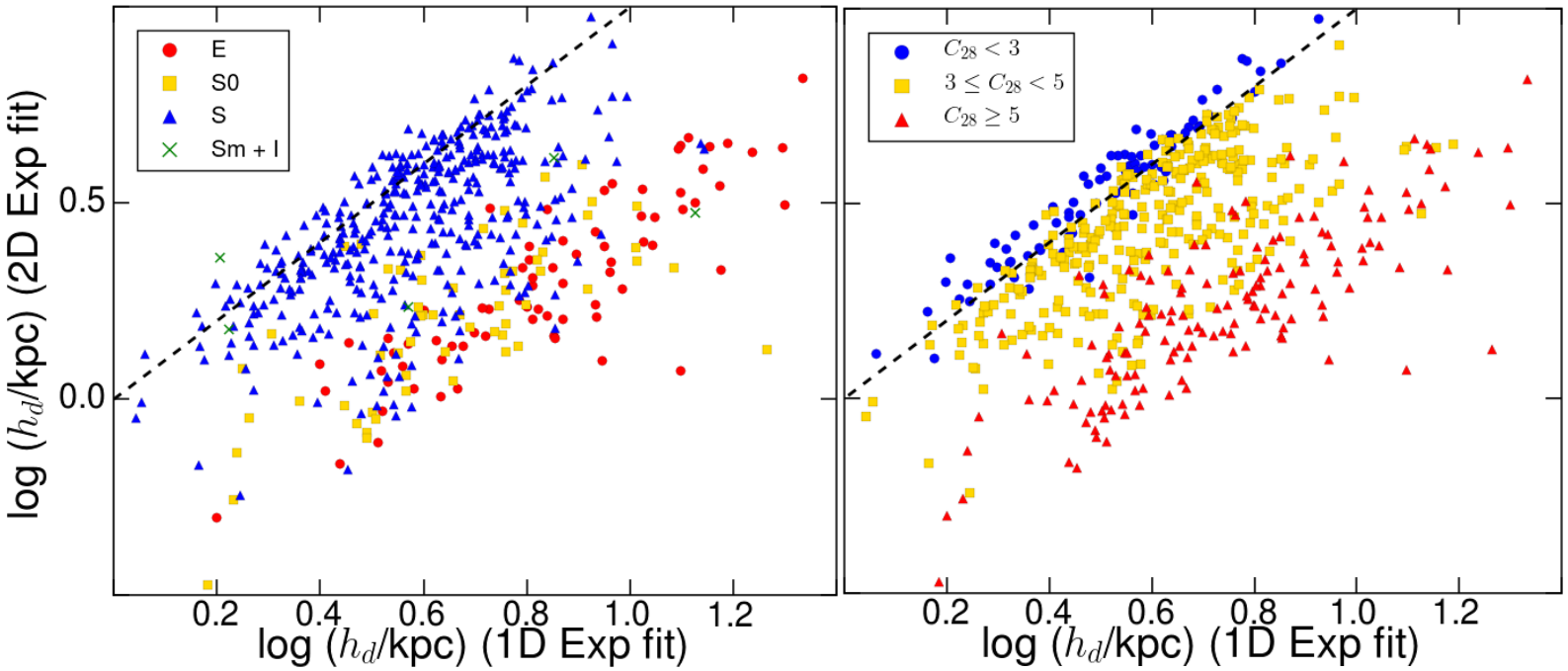
Hall+2012

- SDSS products are known to be inadequate
- Walcher+2014 carefully covers CALIFA mother sample
- Aim to provide a more comprehensive catalog
  - Compare utility of parameters
  - Construct scaling relations
  - Partner with metallicity, dynamics, and other spectroscopic quantities

	1D & 2D fits (Imfit, Erwin+2015)
SDSS DR10 *ugriz* profiles	Single Exponential
PA, *e*	Single Sérsic
M_i (total and extrapolated)	Exponential Bulge + Exponential Disk
g-r, g-i (extrapolated)	Sérsic Bulge + Exponential Disk
M_* (extrapolated)	Sérsic Bulge + Broken Exponential Disk
$M_{23.5}$, $R_{23.5}$	Favoured 1D model
R_e, μ_e	Favoured 2D model
C_{28}	
Gini coefficient	
M_{20}	

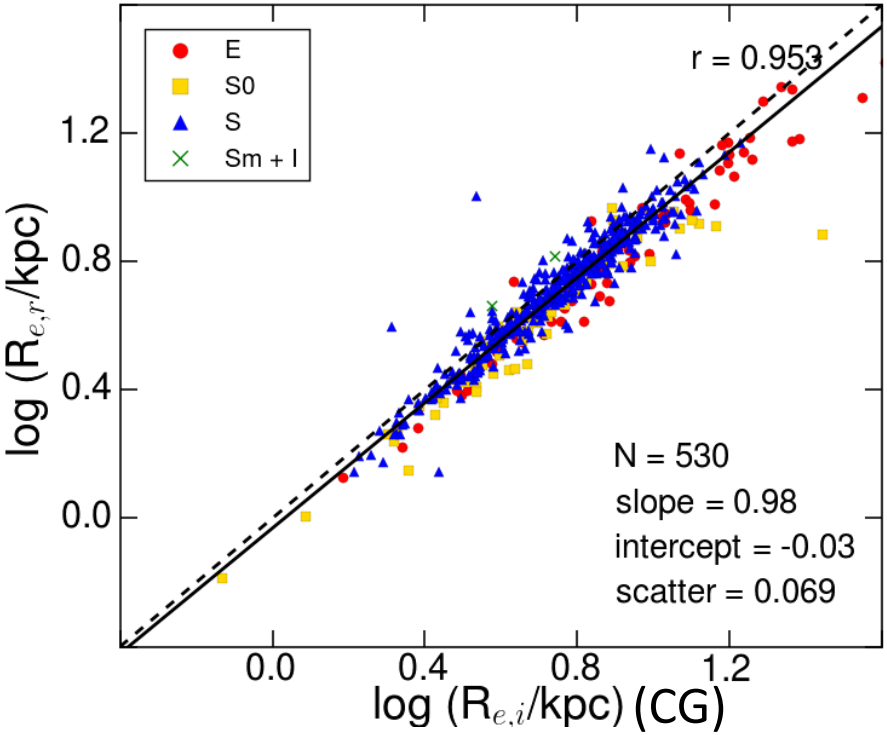
1D vs. 2D modelling

- **Magnitude- vs. intensity-weighted**
- Higher concentration -> favouring of inner region
- Correlation with independent parameter (HI line width) stronger for 1D (r=0.50 vs r=0.17)

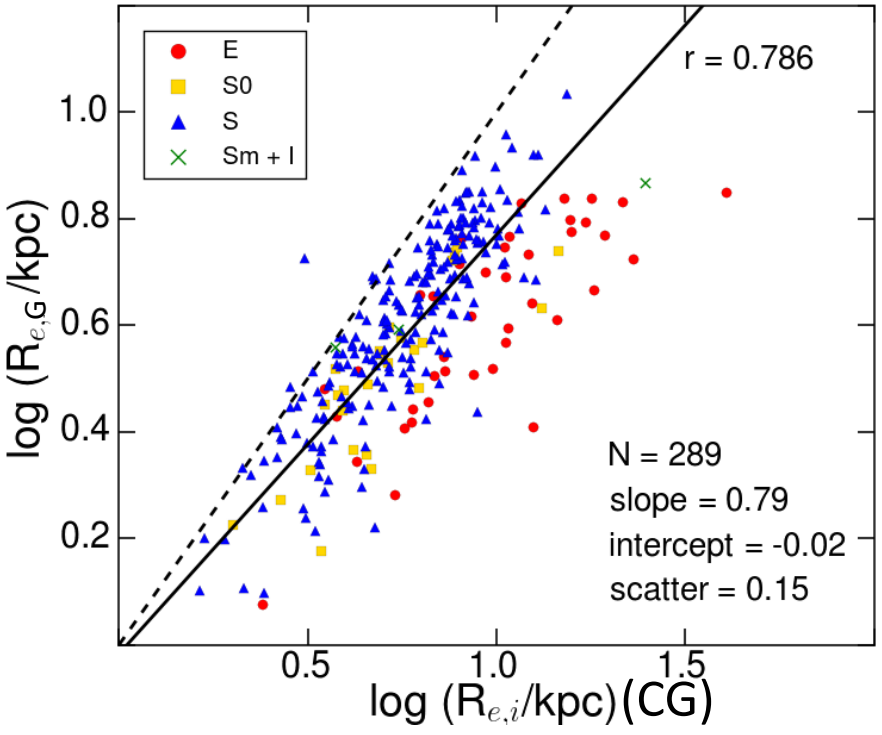


Effective radii

Walcher+2014

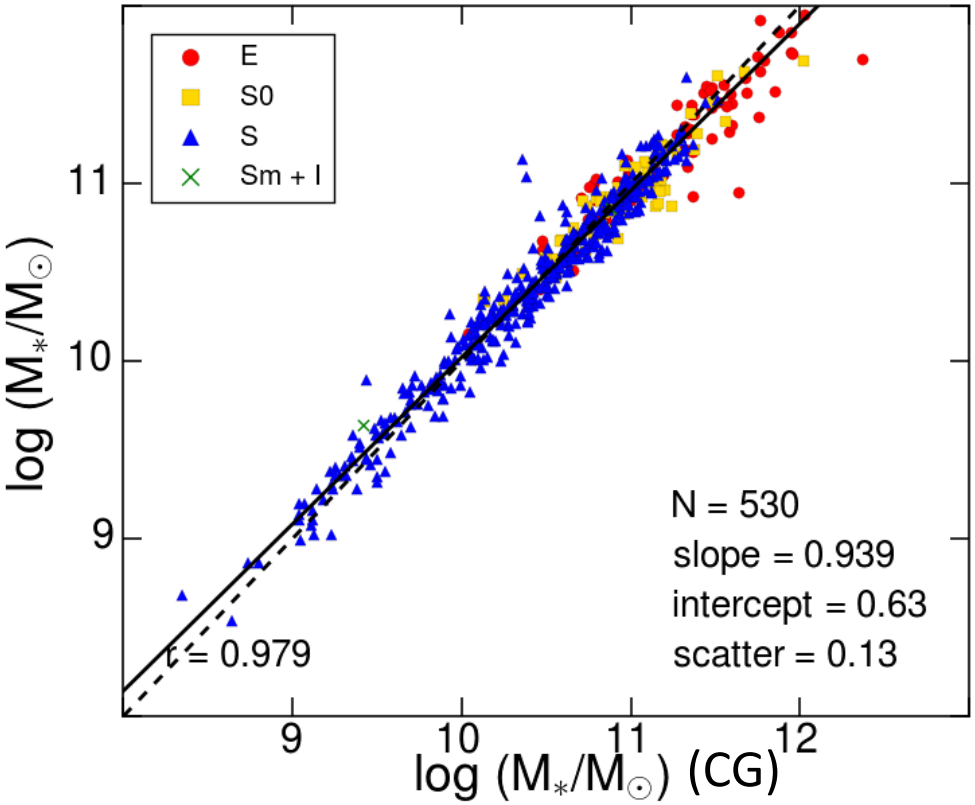


González-Delgado+2015

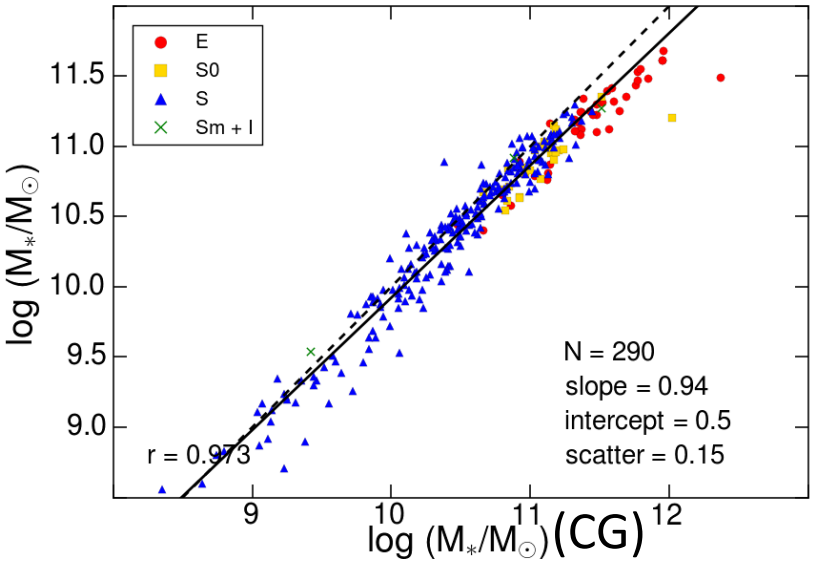


Stellar Masses

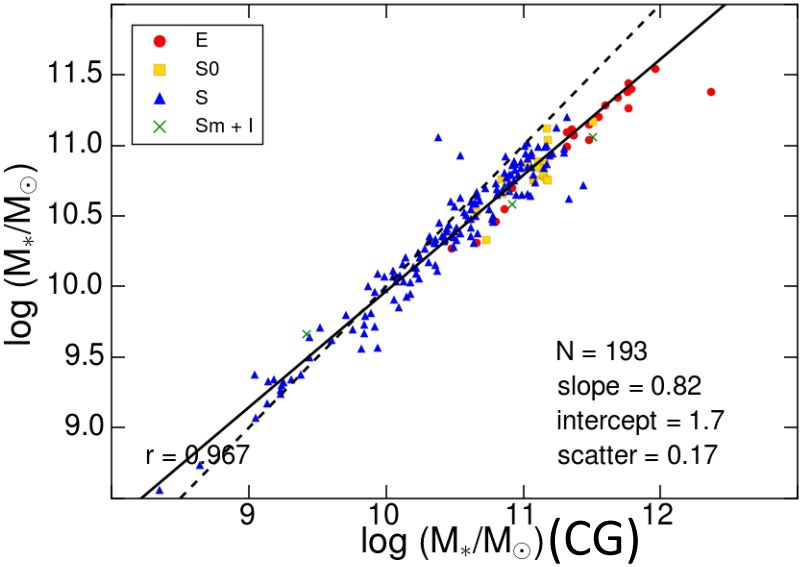
Walcher+2014 (optical)



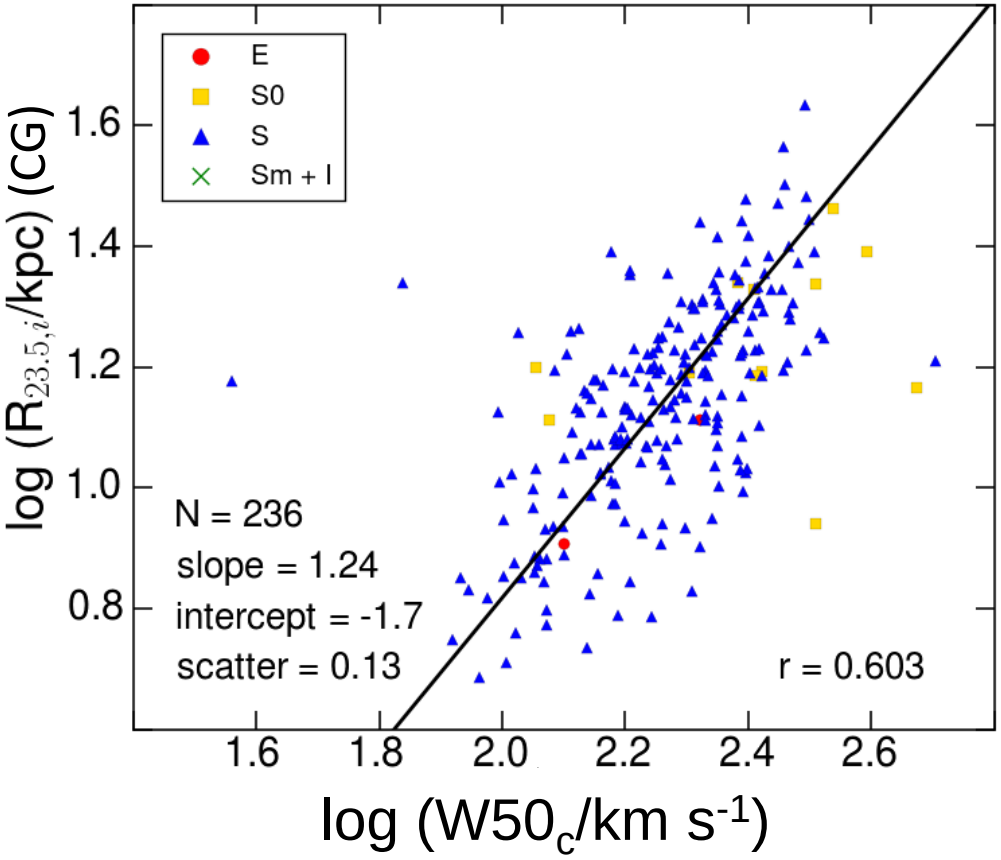
González-Delgado+2015

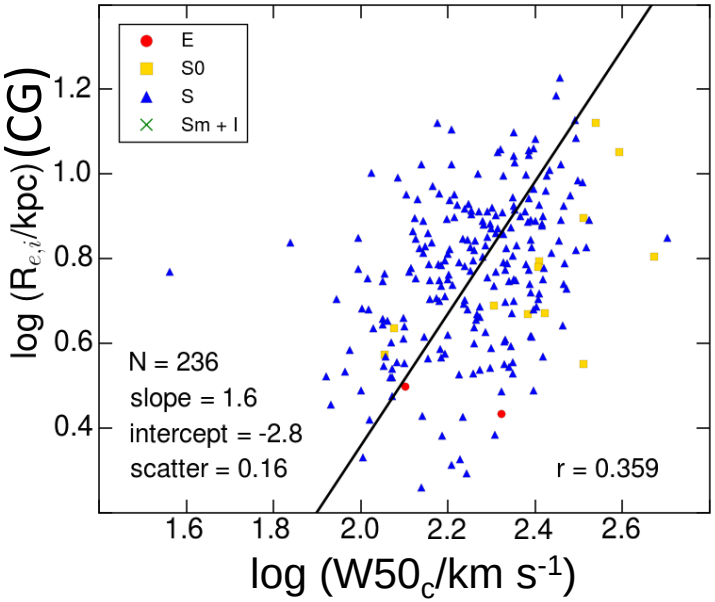


Sánchez+2016

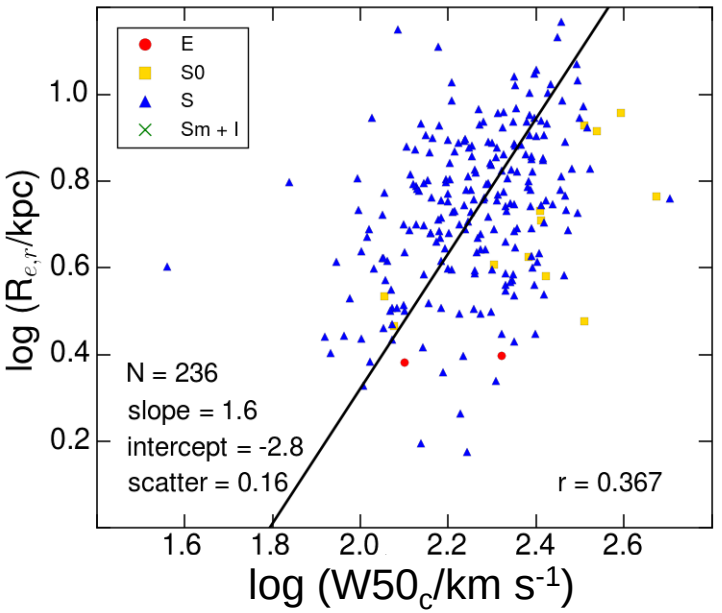


$R_{23.5}$ and R_e

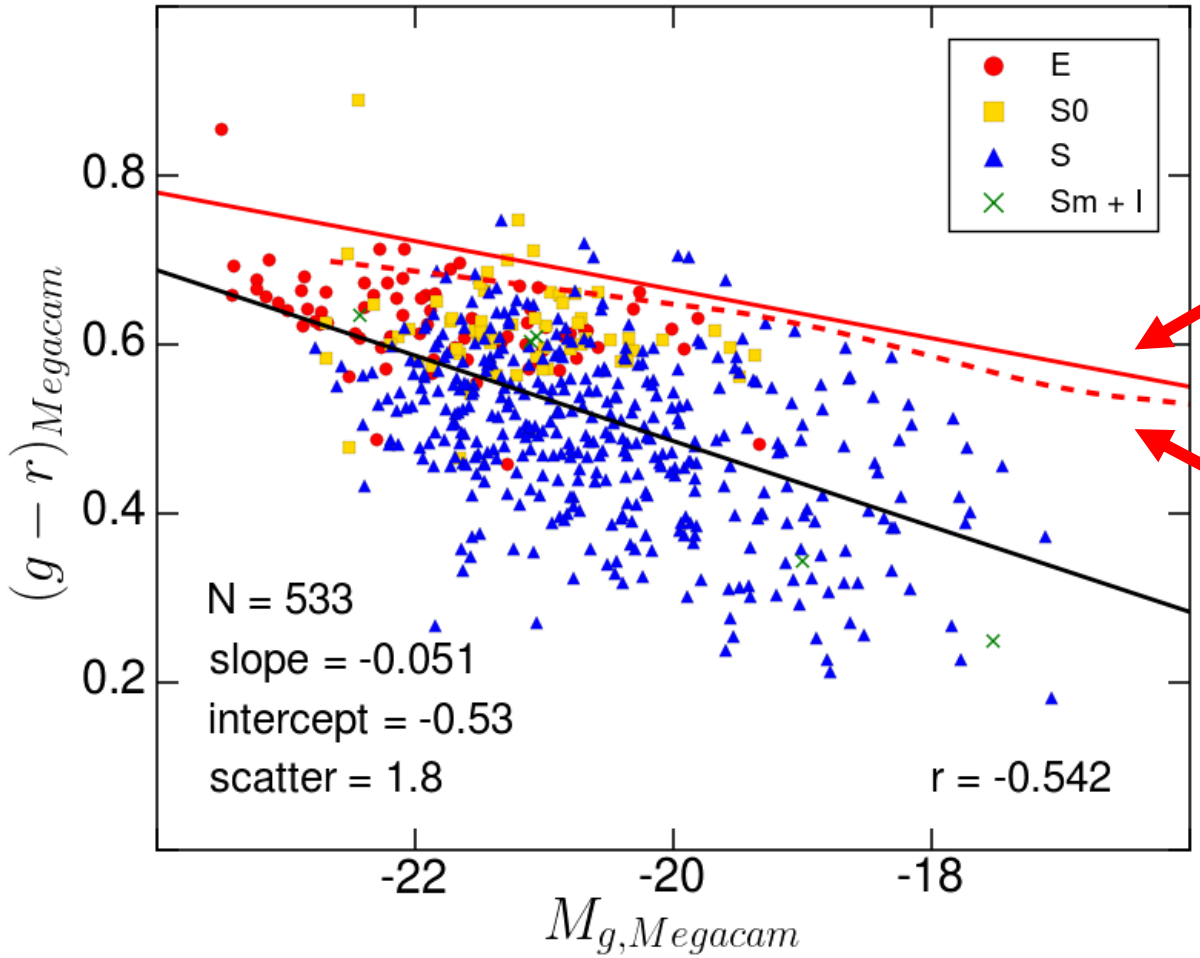




Walcher+2014



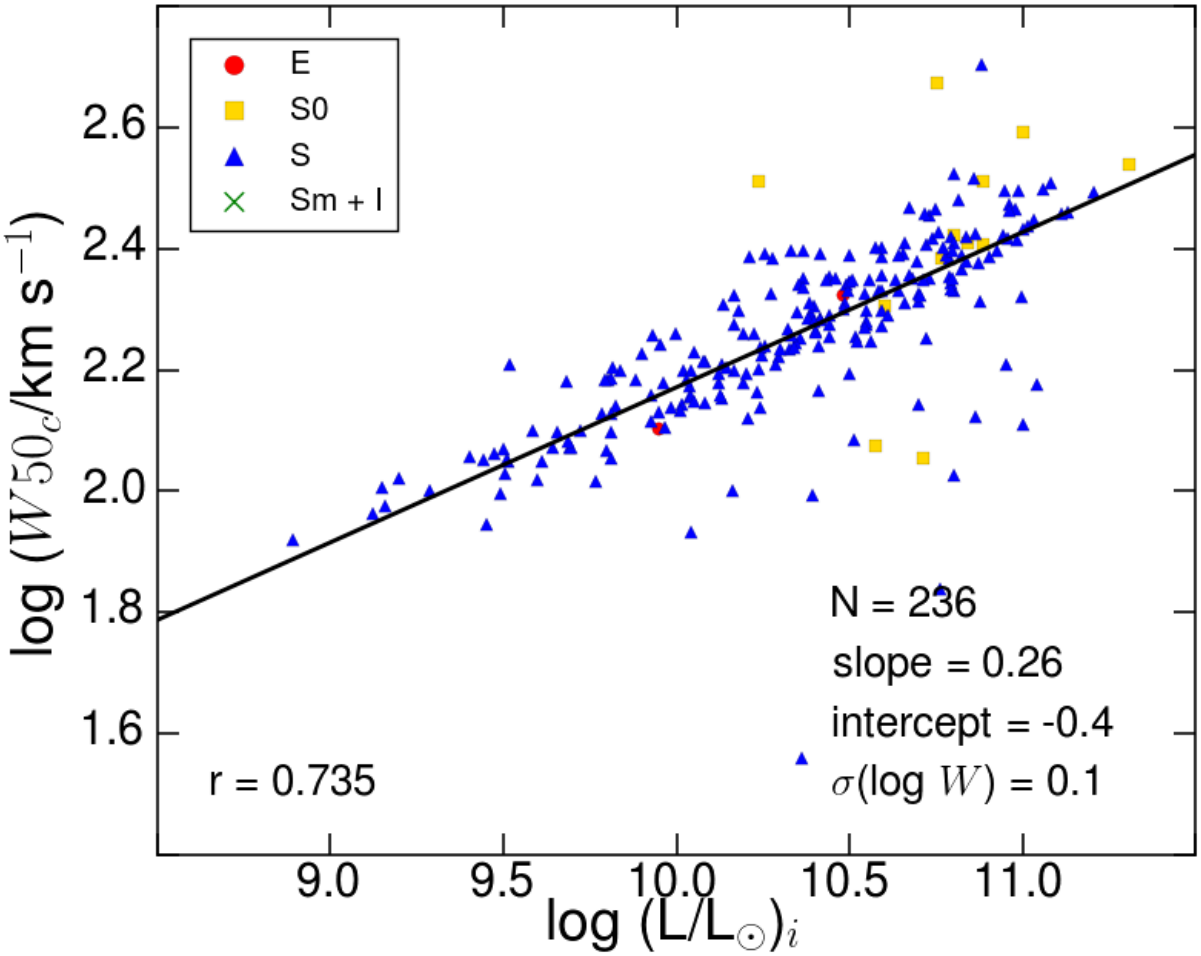
CALIFA + Virgo CMR



Roediger+2016
(in prep.)

Janz+Lisker2009

CALIFA Tully-Fisher relation



Courteau+2007:
N = 1303
Slope = 0.29
σ(log W) = 0.05
r = 0.92

Bekeraité+2016:
N = 199
Slope = 0.33
σ(log W) = 0.03

Summary

- Similar to Walcher+2014 but significantly extended
- Importance of uniform measurements from multiple methods
- CALIFA-based photometric parameters likely biased by limited spatial extent
- Comprehensive catalog enables exploration and assessment of photometric quantities
- Compliments spectroscopic analyses