Galactic Conformity at $0.2 < z < 1$ with PRIMUS

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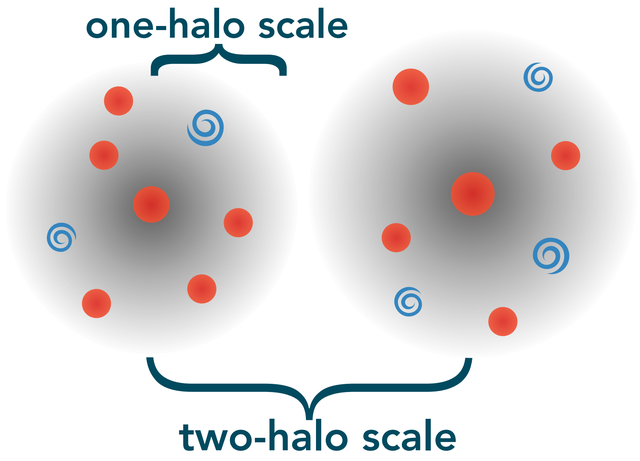
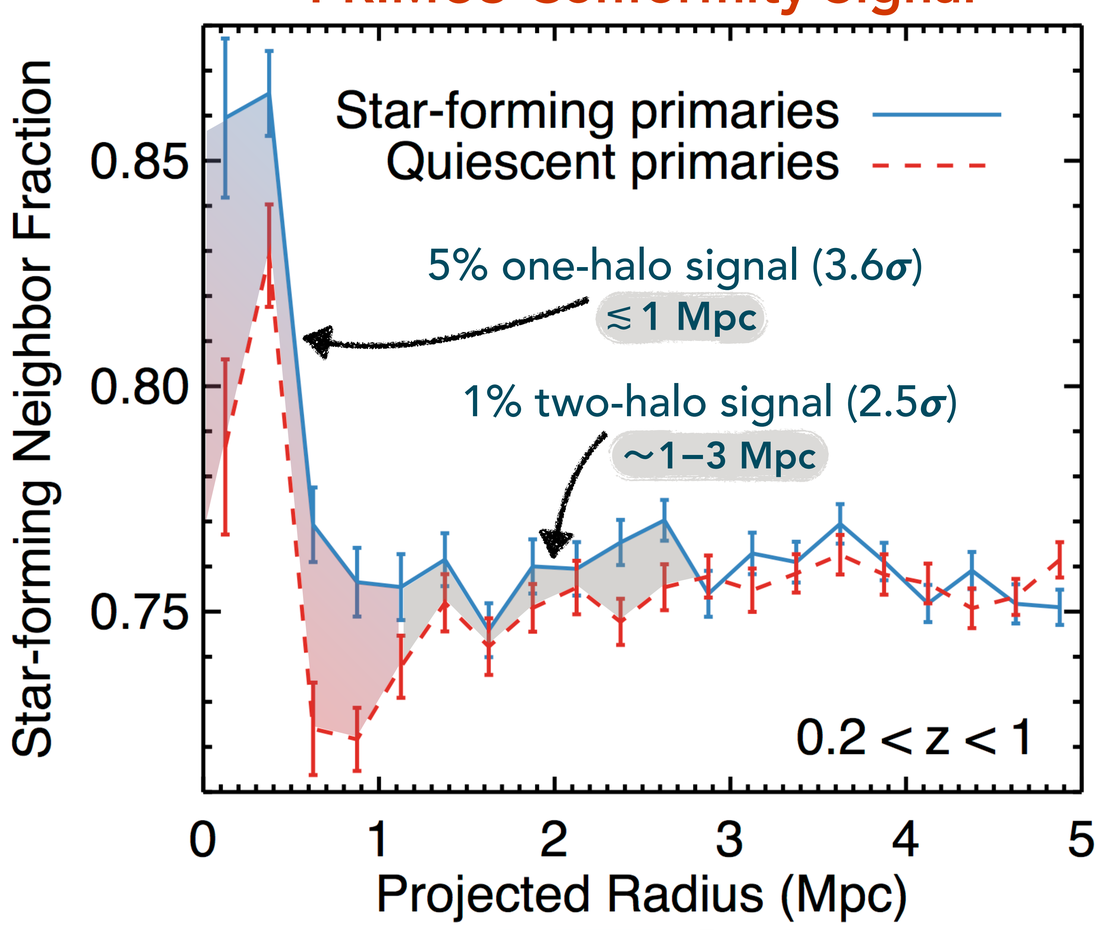
Galactic Conformity



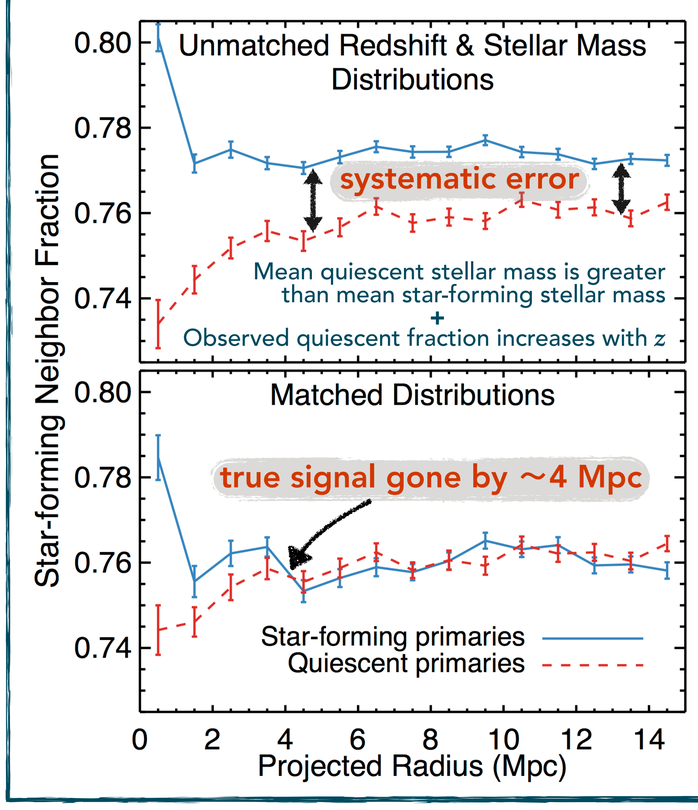
- Correlation between colors, morphologies, specific star formation rates, etc. of massive central galaxies and neighboring galaxies within a few Mpc
- Neighboring galaxies seem to "know" whether the central galaxy in their parent halo (or an adjacent halo) is **star-forming** or **quiescent**
- First observed at one- and two-halo scales in SDSS (Weinmann et al. 2006, Kauffmann et al. 2013)

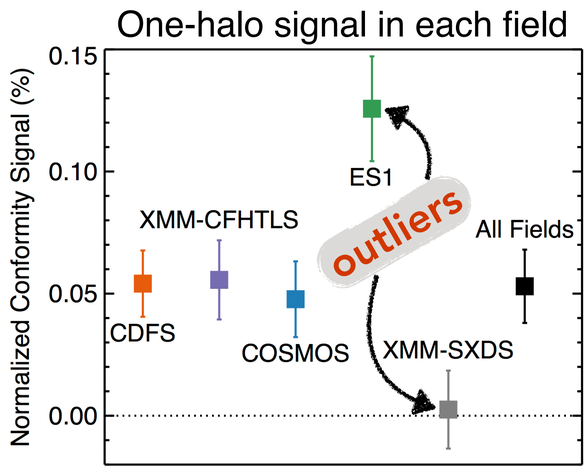
PRIMUS Conformity Signal

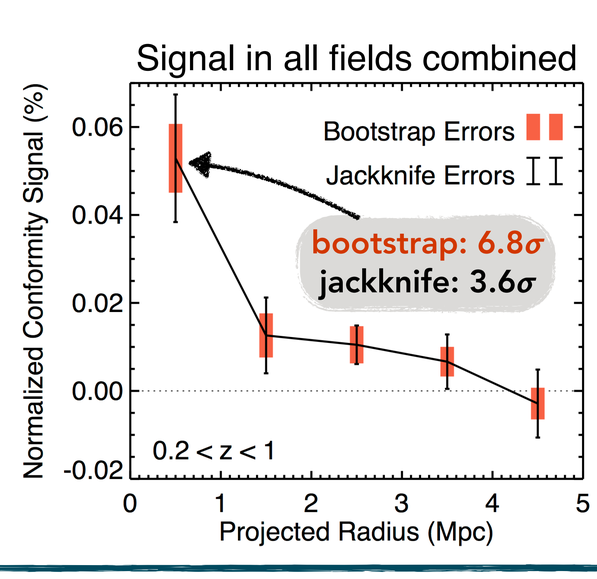


Effects of Systematic Error and Cosmic Variance

- Essential to **match redshift and stellar mass distributions** of star-forming and quiescent primary galaxy samples
- Conformity should be measured in **multiple fields** to account for cosmic variance
- Estimating uncertainty with bootstrap resampling does **not** incorporate field-to-field variation





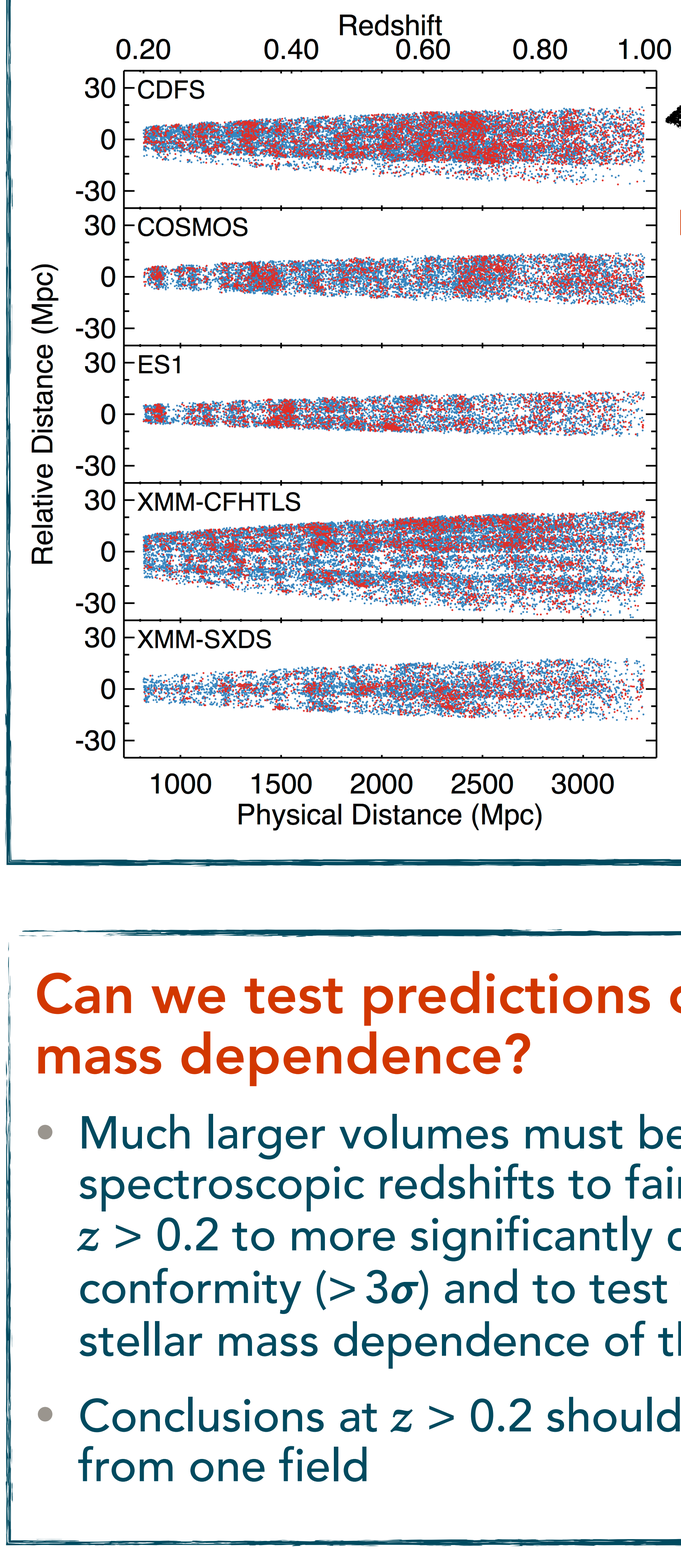


Evidence for Assembly Bias

- Halo occupation distribution (HOD) models without assembly bias predict **no** conformity
- Hearin et al. (2015a) age matching HOD model applied to simulations predicts two-halo conformity that decreases with increasing redshift and halo mass
- In simulations large-scale tidal fields cause **halo accretion conformity**, which could be responsible for two-halo galactic conformity if dark matter accretion and baryon accretion are sufficiently coupled (Hearin et al. 2015b)
- Tests at higher redshift ($z > 0.2$) are needed

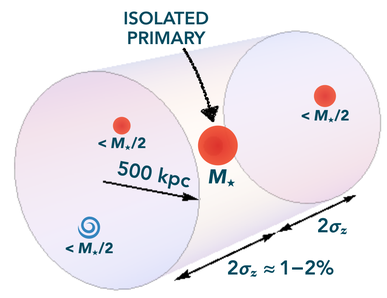
PRIsm MUlti-object Survey (PRIMUS)

- 60,000 spectroscopic redshifts at $0.2 < z < 1$
- 5.5 square degrees over 5 fields
- Galaxy mass range: $8.5 \lesssim \log(M_\star/M_\odot) \lesssim 11.3$
- Galaxies classified as **star-forming** or **quiescent** with evolving cut in $M_\star$ vs. sSFR
- Conformity measured for sample of **"isolated primary" galaxies** above redshift-dependent PRIMUS mass-completeness limit



all ~60,000 PRIMUS galaxies with robust redshifts

Primary Galaxy Sample



We define **isolated primary galaxies** in PRIMUS as those with no other galaxies more massive than $M_\star/2$ within a projected distance of 500 kpc and 2σ in redshift space

Can we test predictions of redshift and mass dependence?

- Much larger volumes must be surveyed with spectroscopic redshifts to faint depths at $z > 0.2$ to more significantly detect two-halo conformity ($> 3\sigma$) and to test the redshift and stellar mass dependence of the signal
- Conclusions at $z > 0.2$ should **not** be drawn from one field