

All the WISer: Estimating Stellar Masses with WISE for Strong Gravitational Lensing Elliptical Galaxies



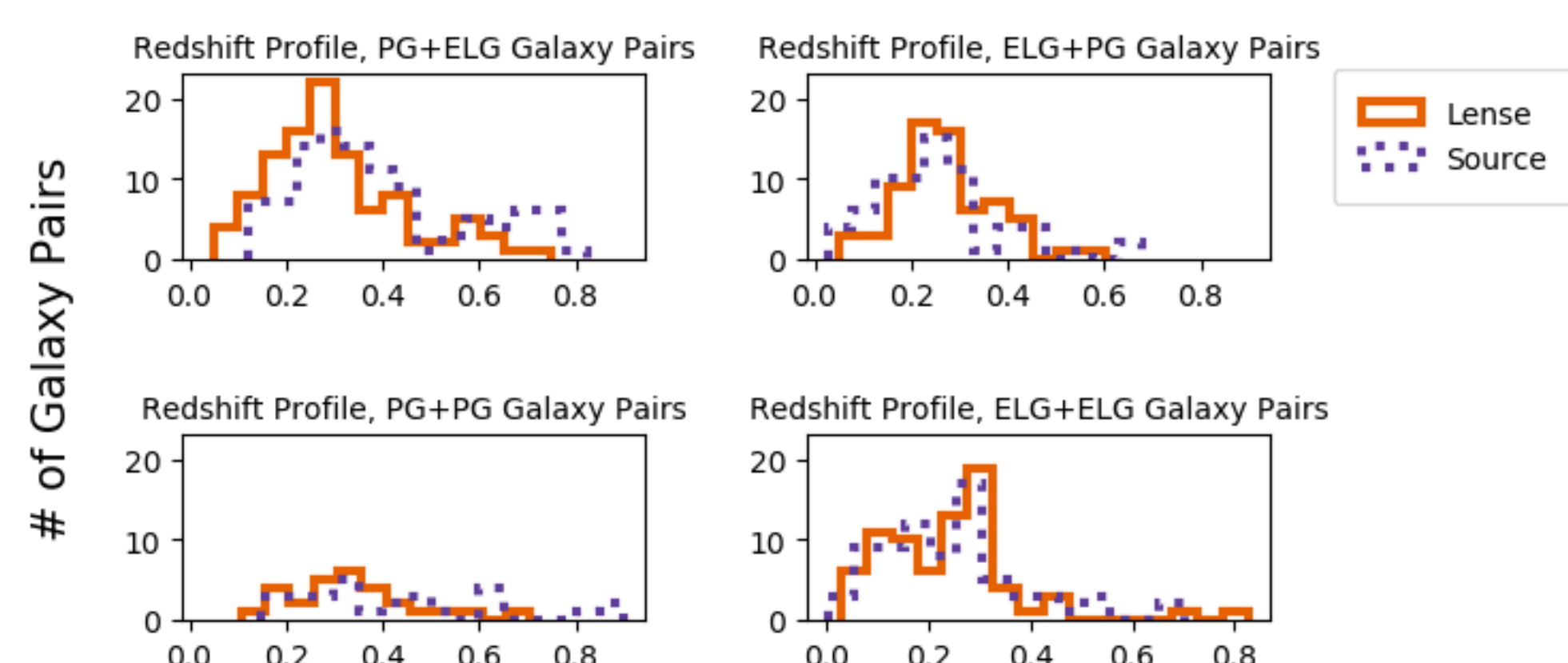
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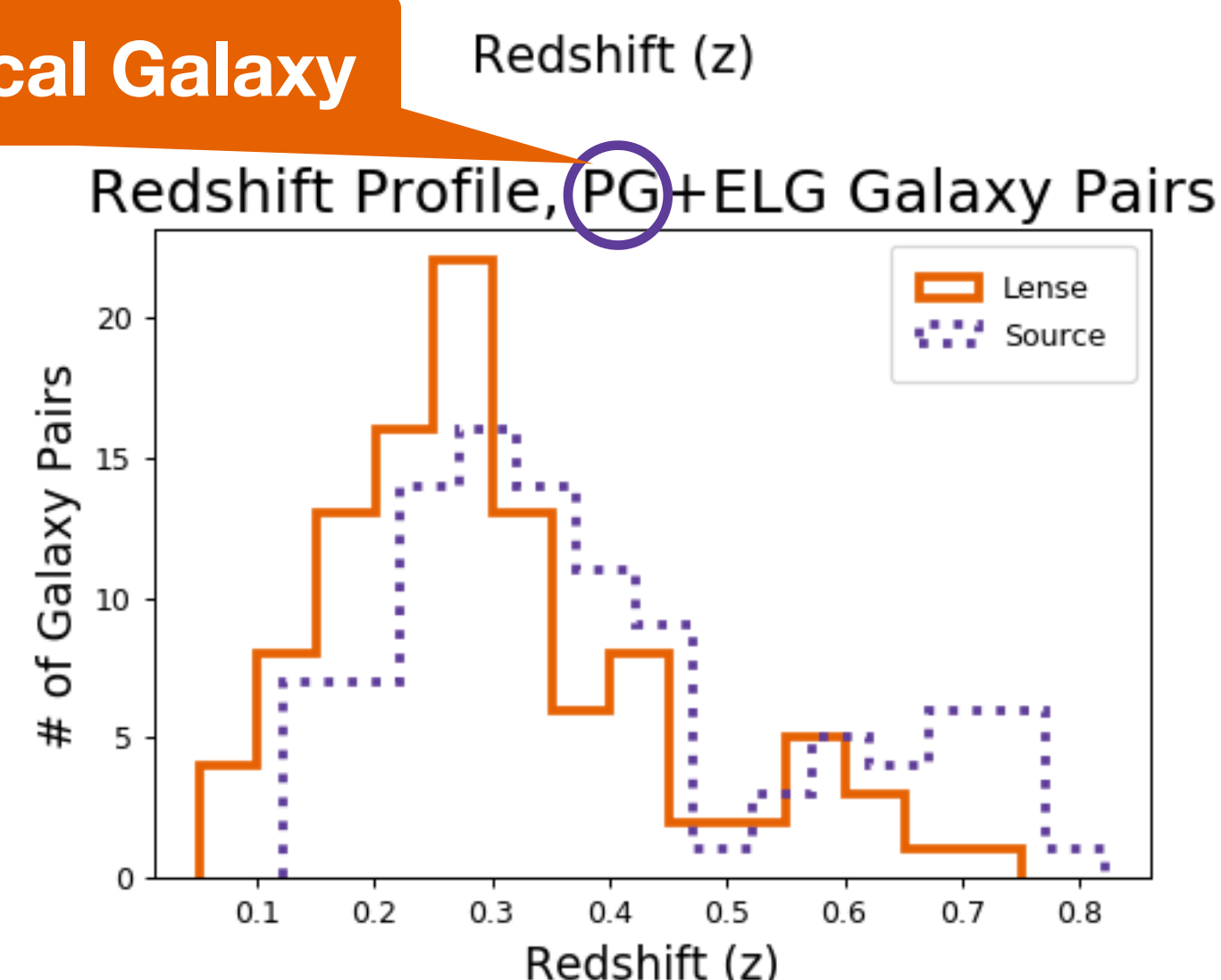
KiDS Strong Lensing Candidates

Galaxy Pair Redshift Profiles by Spec. Type



Kilo-Degree Survey (KiDS) galaxy-galaxy pairs used to produce Galaxy and Mass Assembly (GAMA) catalog of occulting pairs and strong lensing candidates (Holwerda et al. 2015)

Elliptical Galaxy



PhD Project Phases

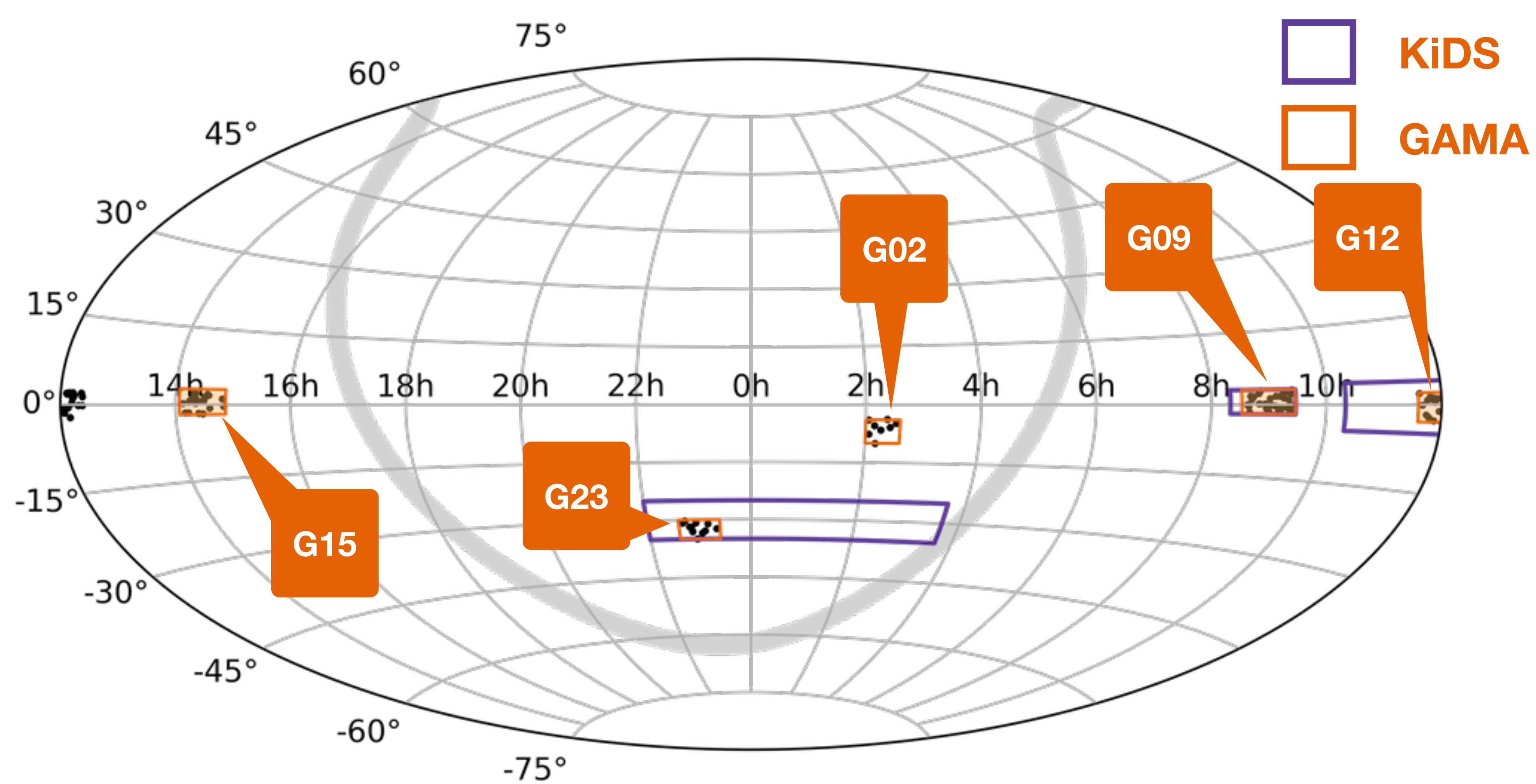
Data Characterization

Stellar Mass, Einstein Radius

GAMA: A Vetted Catalog of Strong Gravitational Lensing Elliptical Galaxies

Gravitational Lens Modeling
Dark Matter Mass Content

GAMA Stellar Masses and WISE Bands



GAMA regions cover more sky than KiDS

Stellar mass estimates for galaxies GAMA regions, released in Data Release 2 (DR2) (Taylor et al. 2011)

GAMA regions 02, 23 redefined, having less completeness than 09, 12, 15 (and therefore, fewer M^* in StellarMasses.fits), but...

WISE All-Sky Survey covers the whole sky!

Methodology

Retrieve WISE data for PG+ELG galaxy pairs

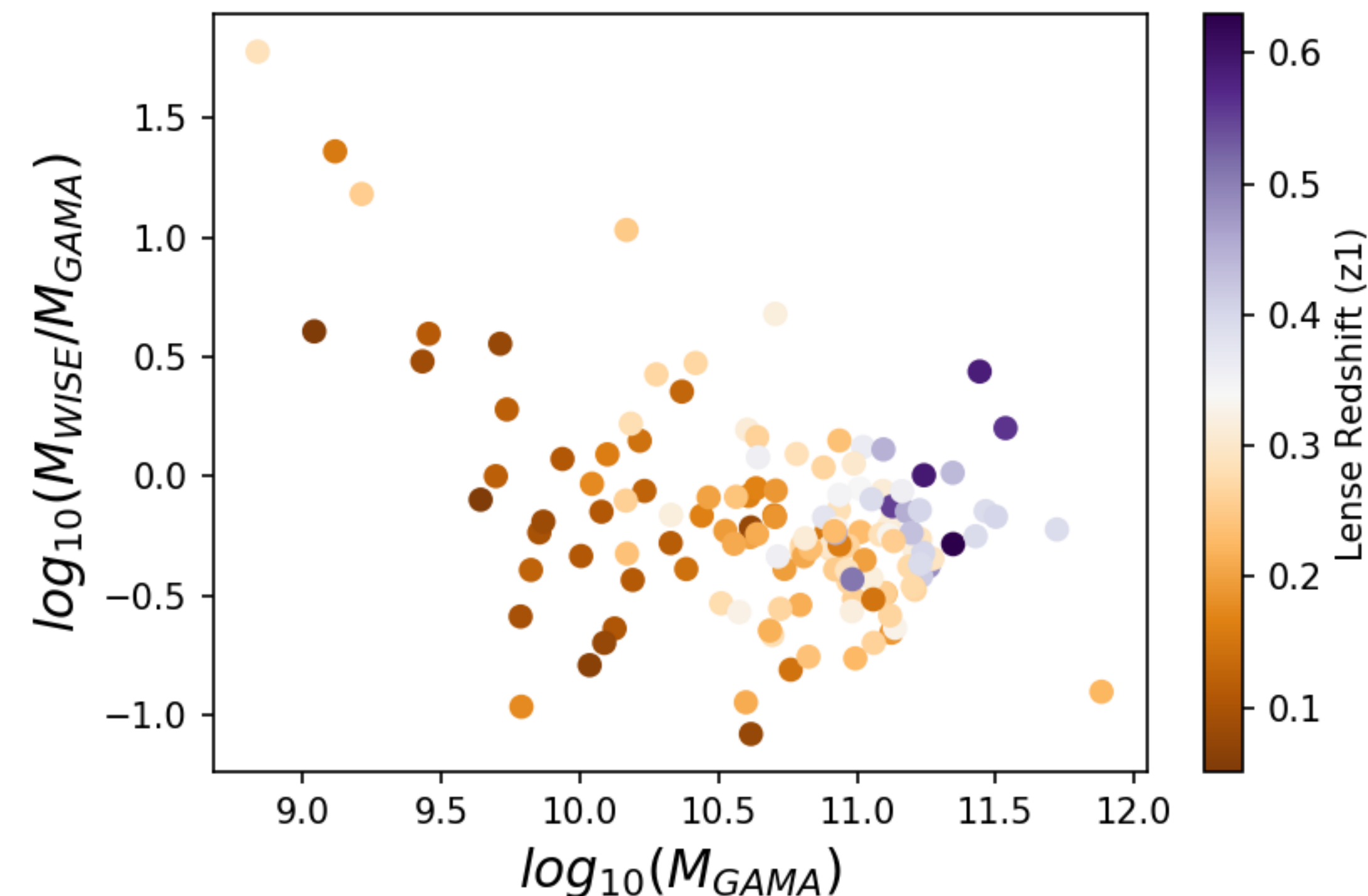
Estimate WISE Stellar Masses (M^*) (Cluver et al. 2014)

Verify Results: WISE $M^* \approx$ GAMA M^* ?



WISE & GAMA M^* Congruence

WISE vs. GAMA Stellar Mass Estimates



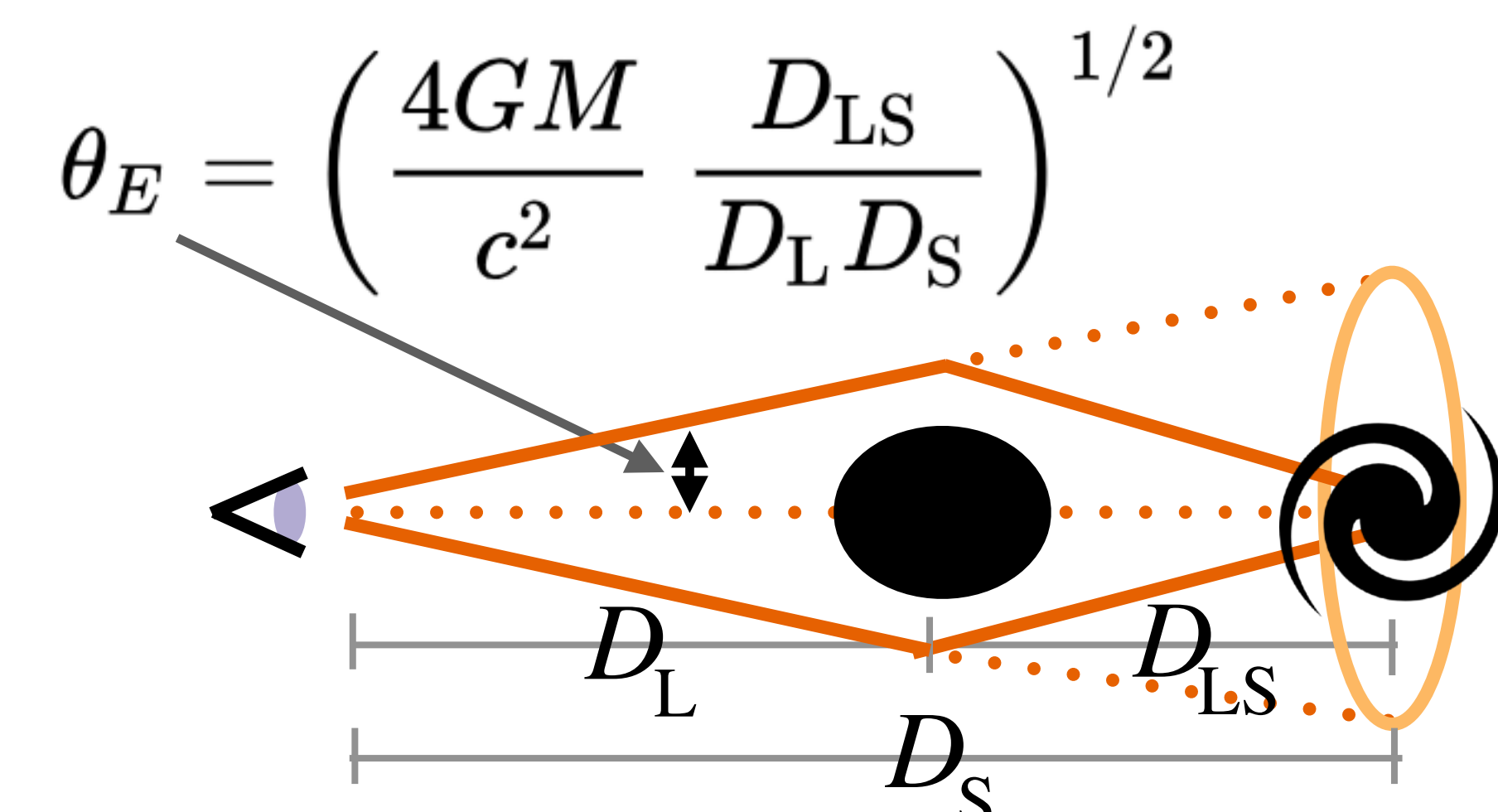
Congruence Factors

Within ~ 1.7 at $10^{10} M_{\odot}$

Within ~ 1 at $10^{11} M_{\odot}$

Next: The Hunt for Dark Matter!

- Stellar mass \rightarrow Baryonic matter content
- Estimate dark matter mass fraction for ellipticals in catalog



References:

- Holwerda et al. (2015), MNRAS, Volume 449, Issue 4.
- Taylor et al. (2011), MNRAS, Volume 418, Issue 3
- Cluver et al. (2014), ApJ, Volume 782, Issue 2