

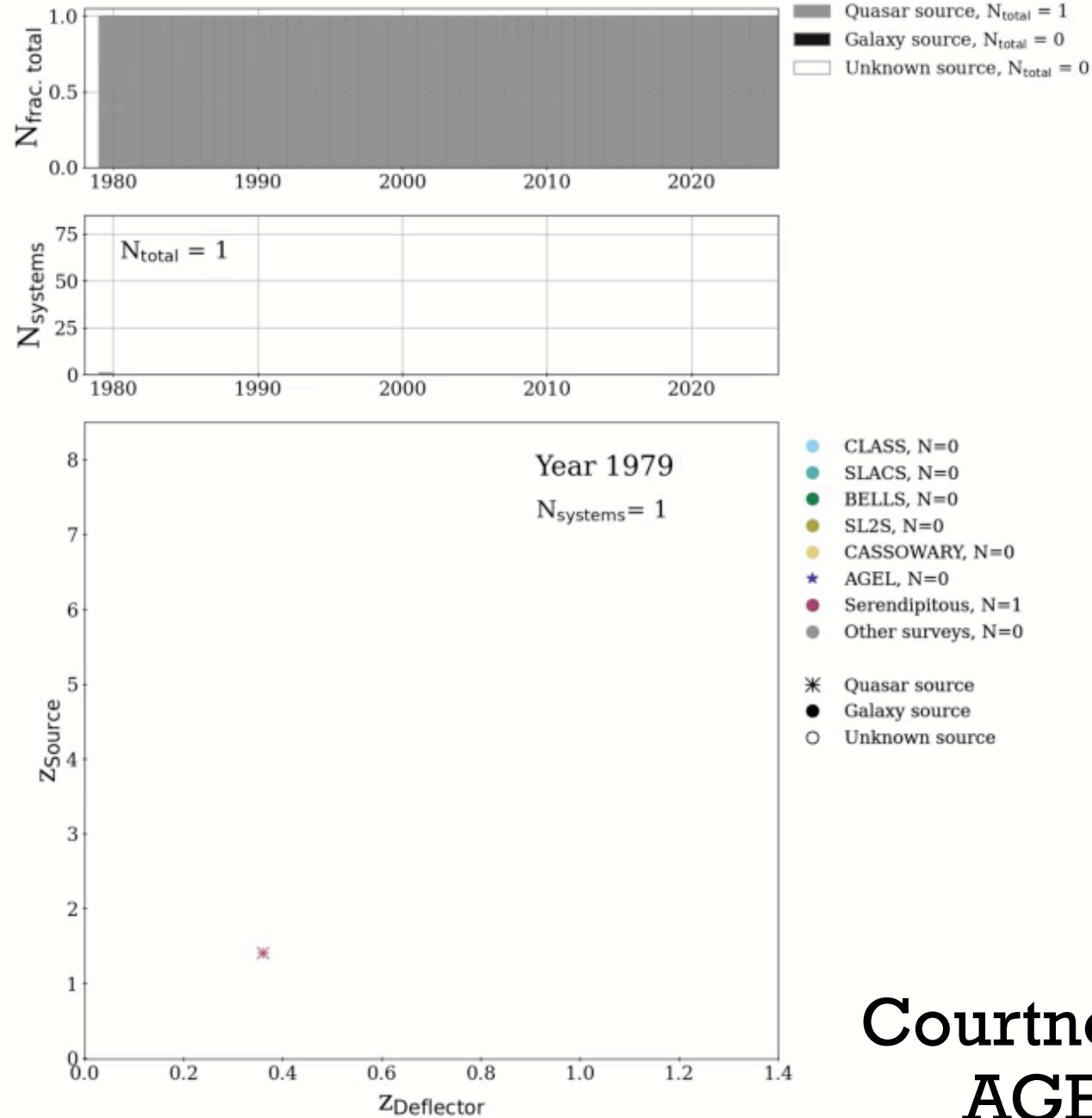
Dark Energy & Super-Massive Black Holes with Roman

<https://sites.google.com/view/agelsurvey/>

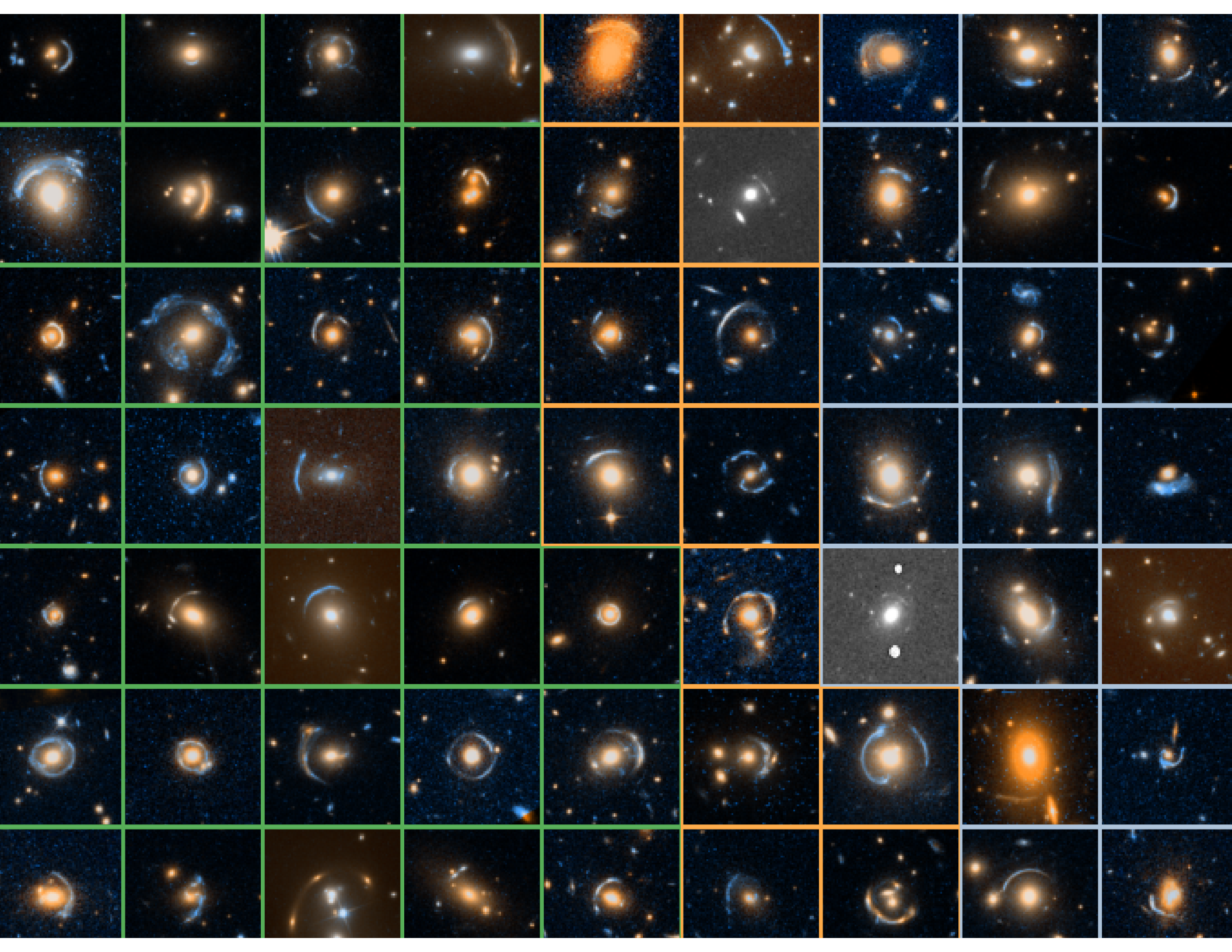
Everything is Lensed

Image courtesy of JWST

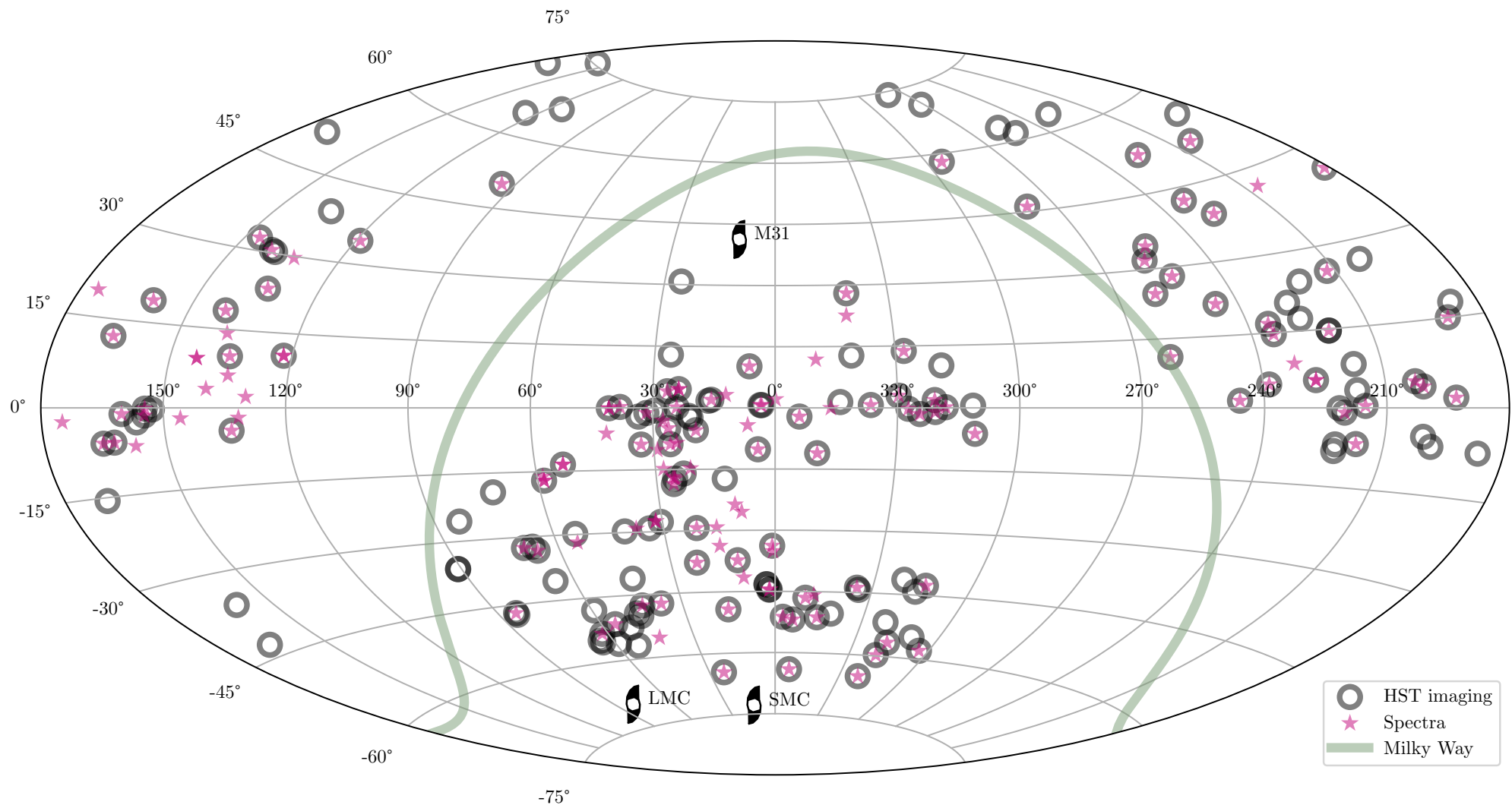
Spectroscopically Confirmed Gravitational Lensing Systems



Courtney Watson
AGEL website

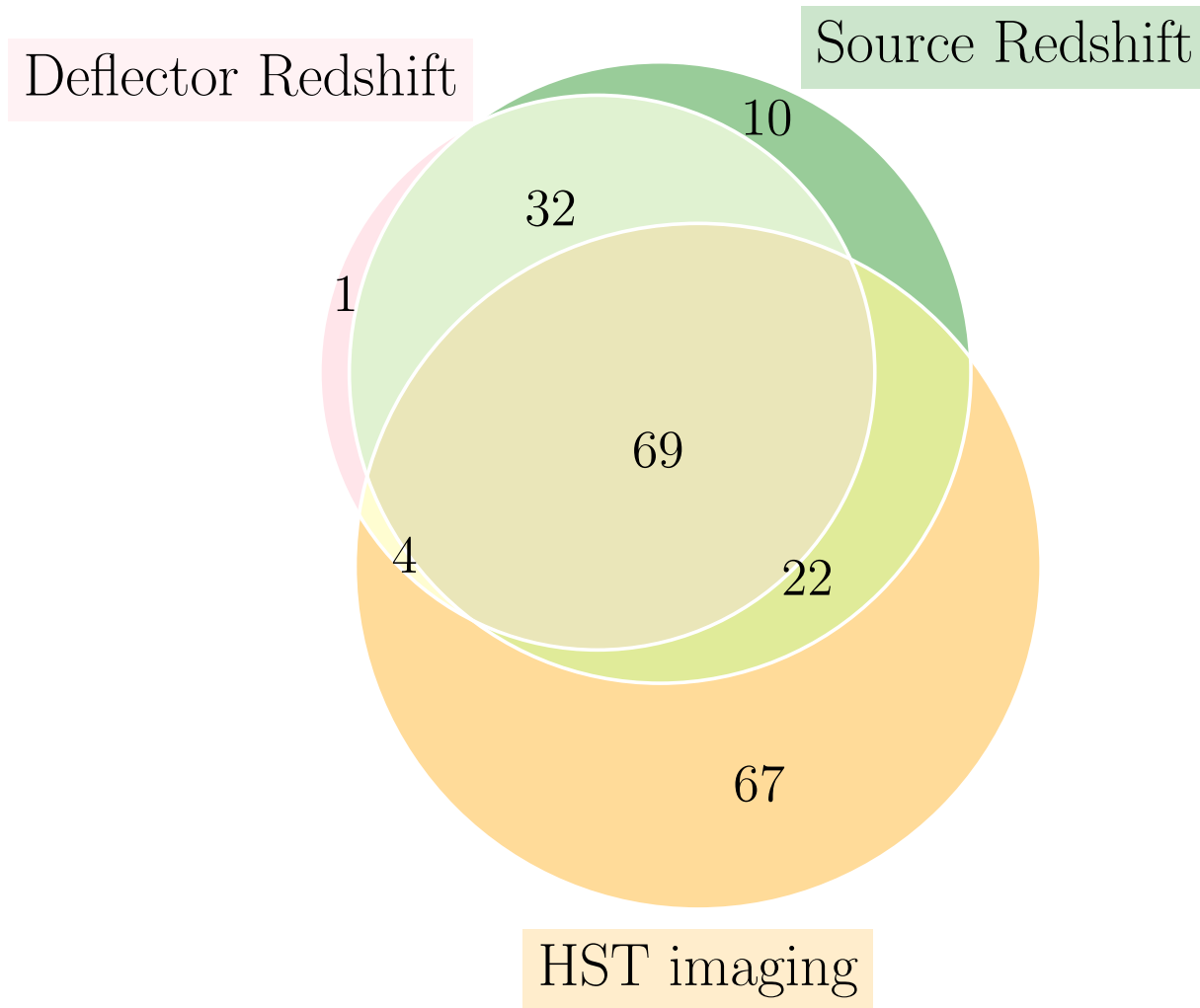


AGEL Data Release 2



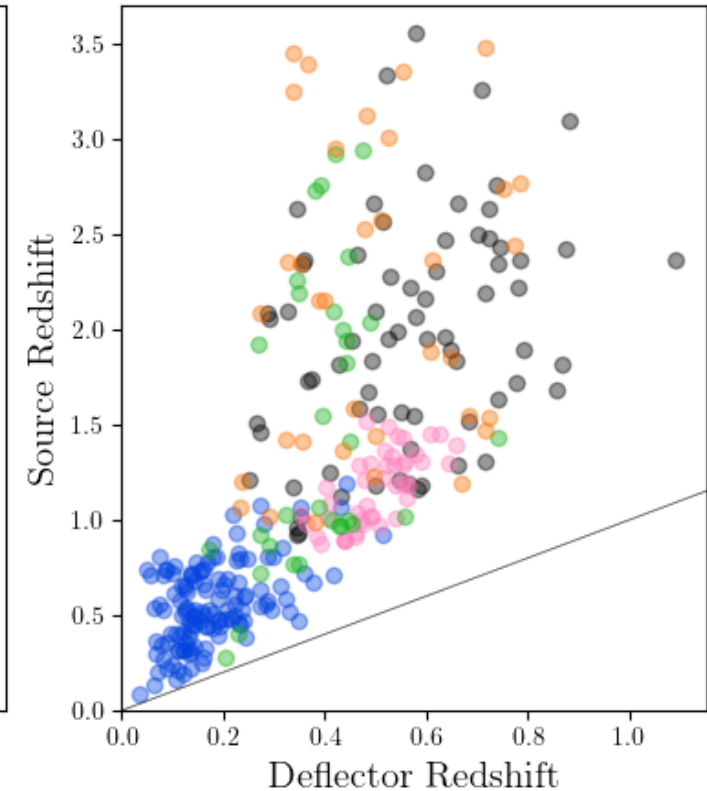
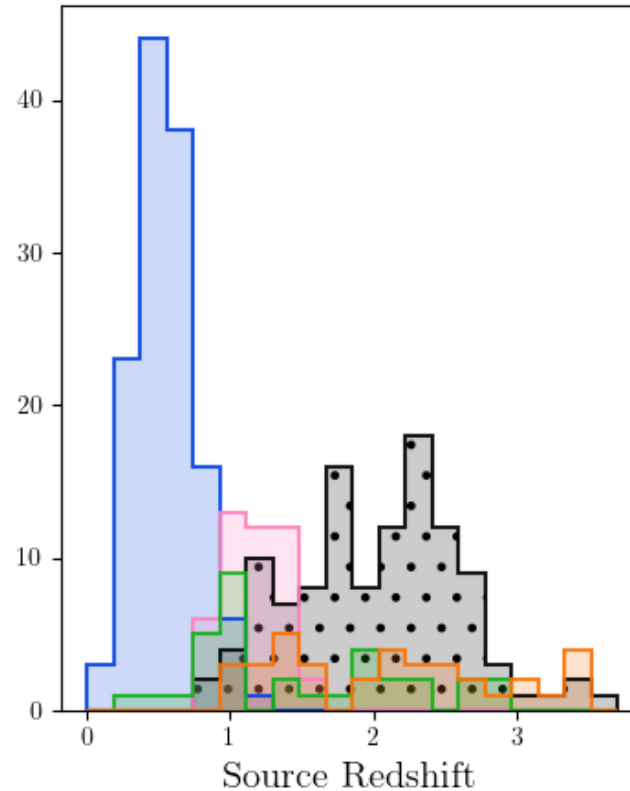
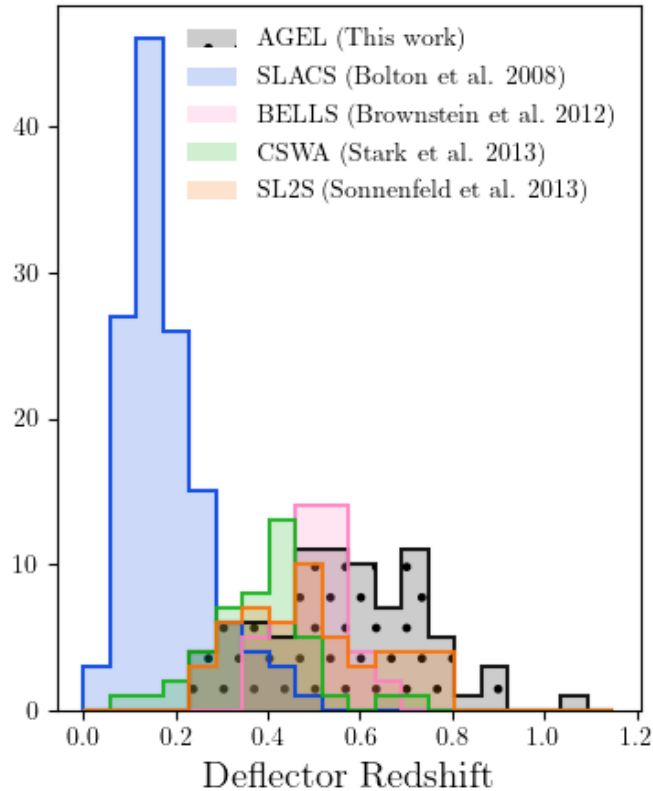
T. Barone+2026

AGEL Data Release 2



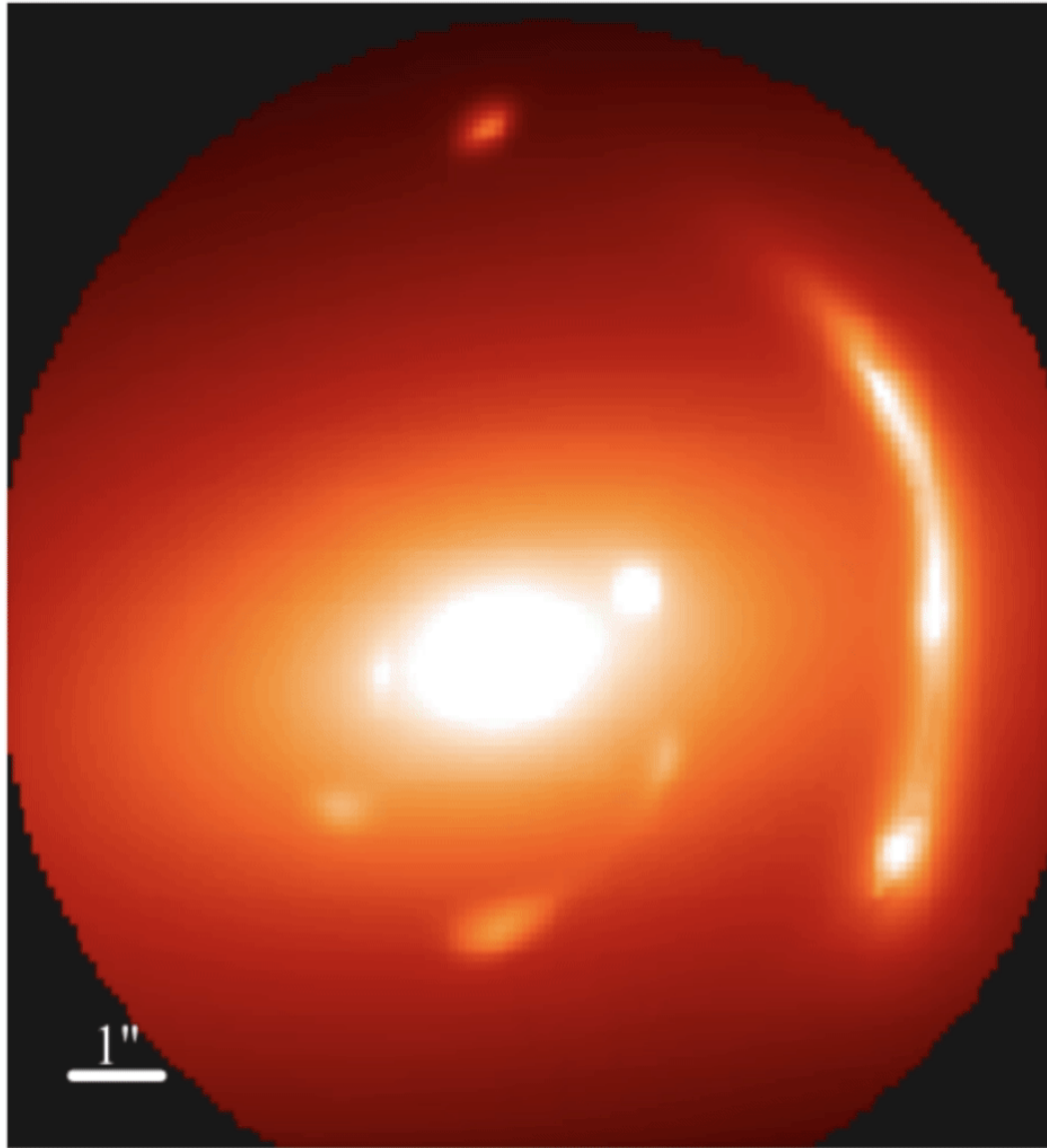
T. Barone+2026

AGEL Data Release 2



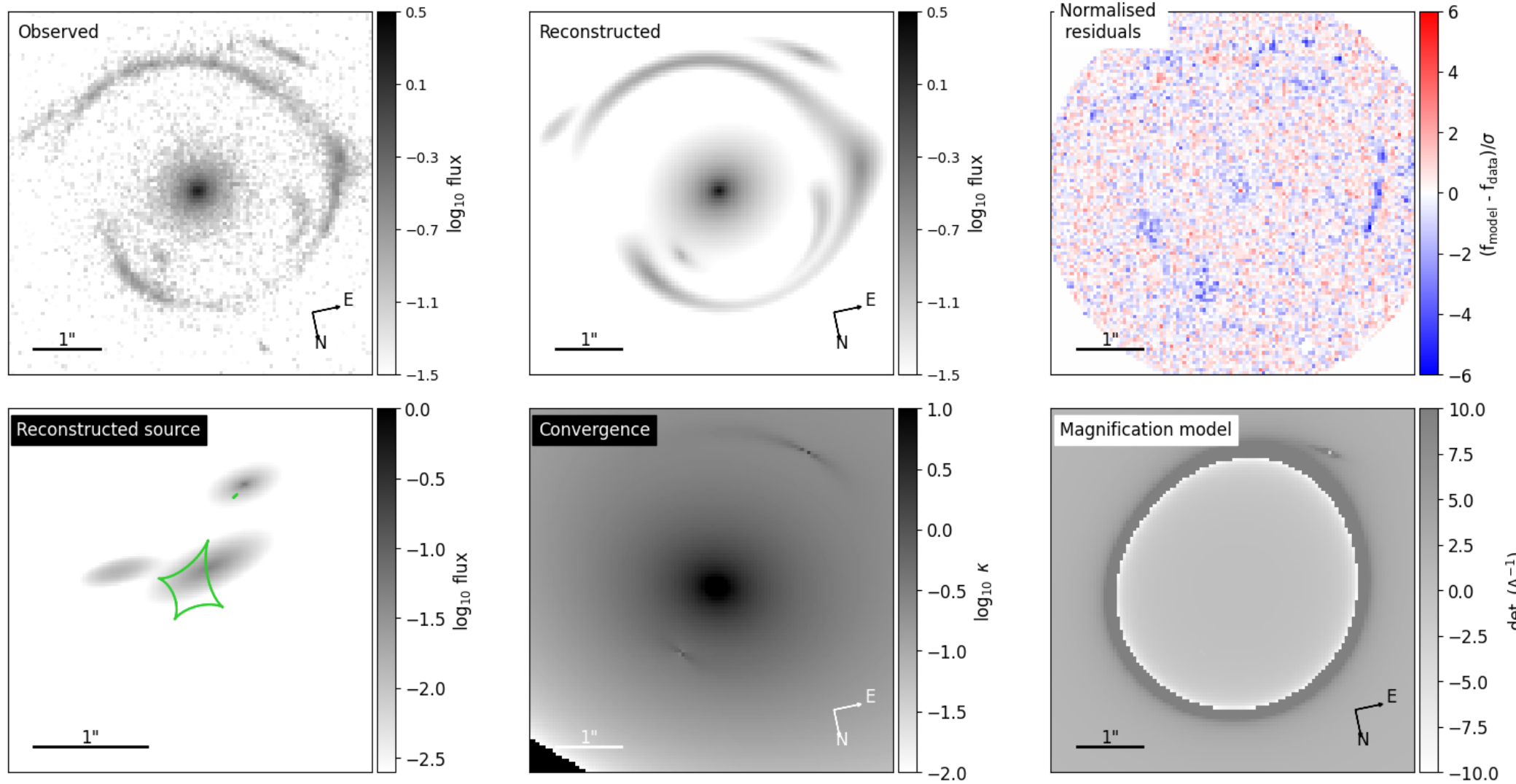
T. Barone+2026

Compound Lenses



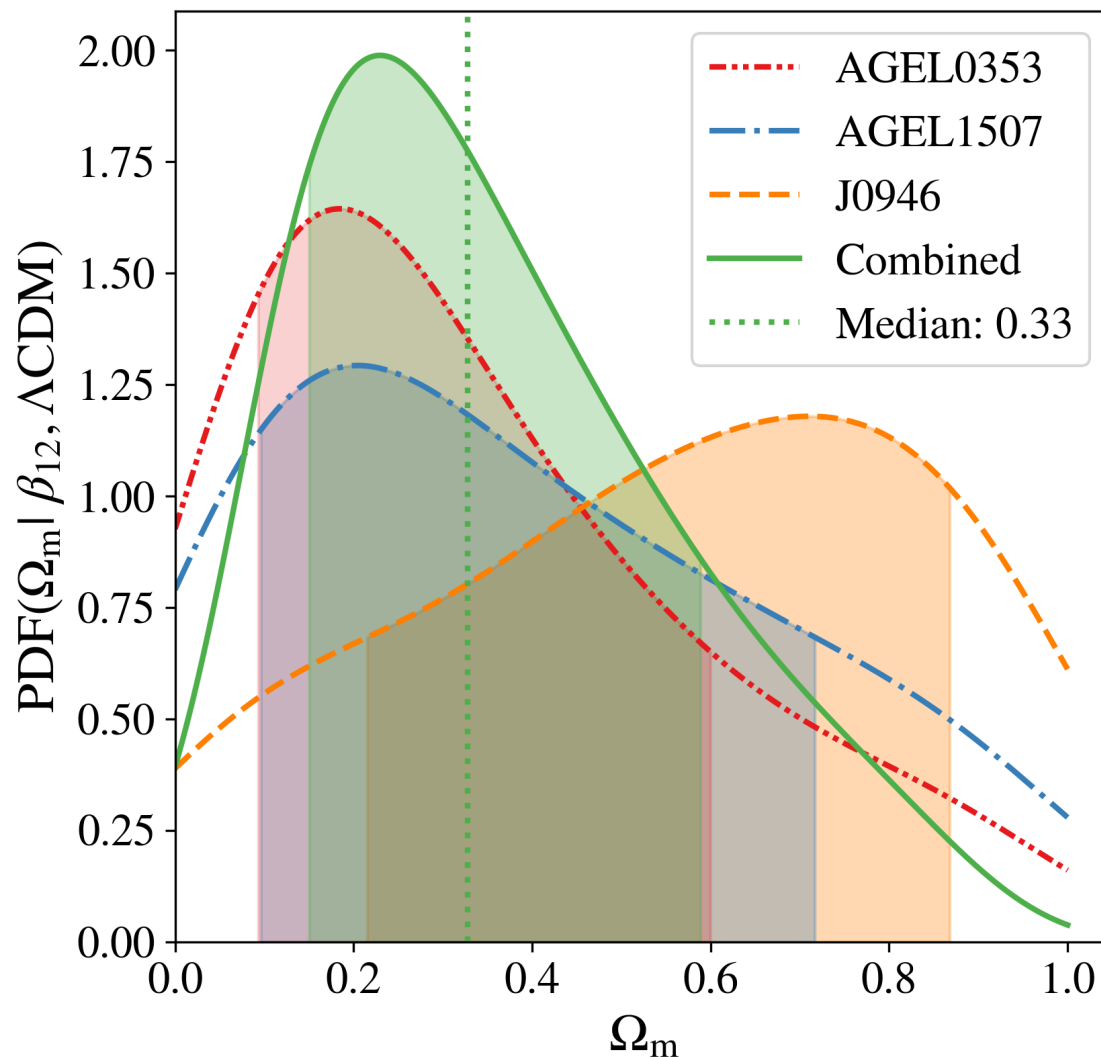
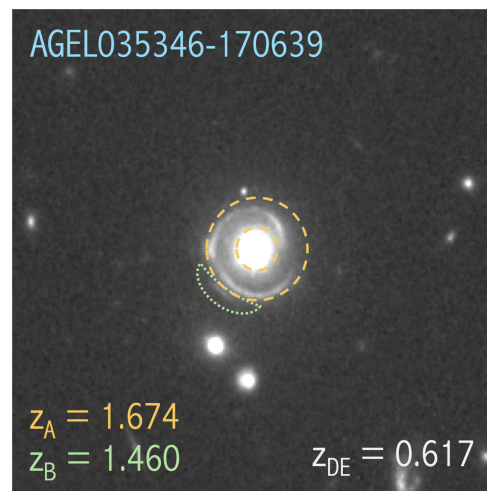
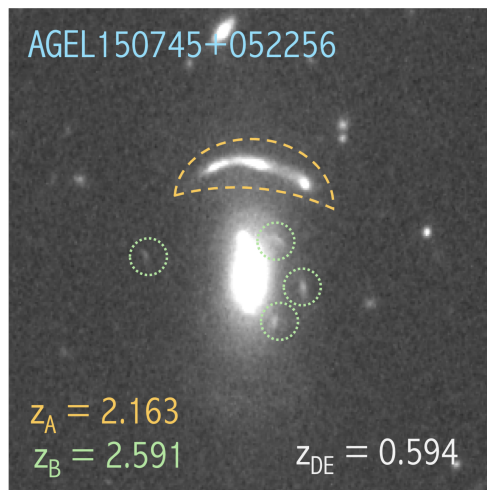
H. McIntosh-Lombardo

Compound Lenses



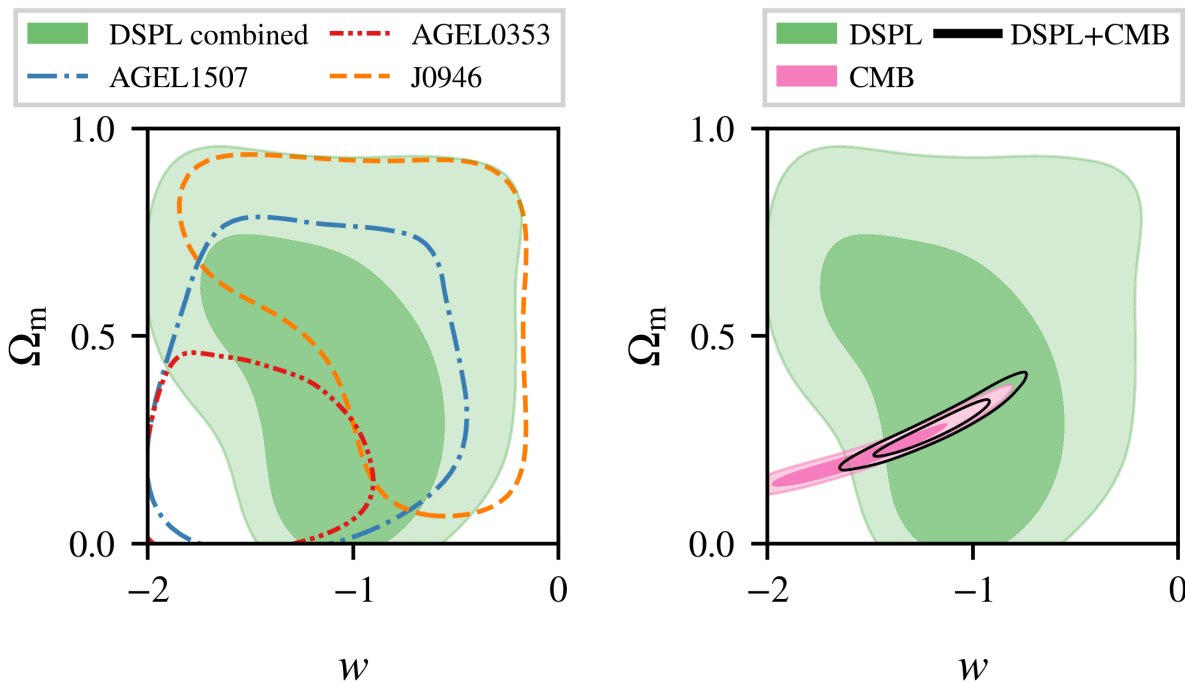
Bowden+2025

AGEL: Cosmography

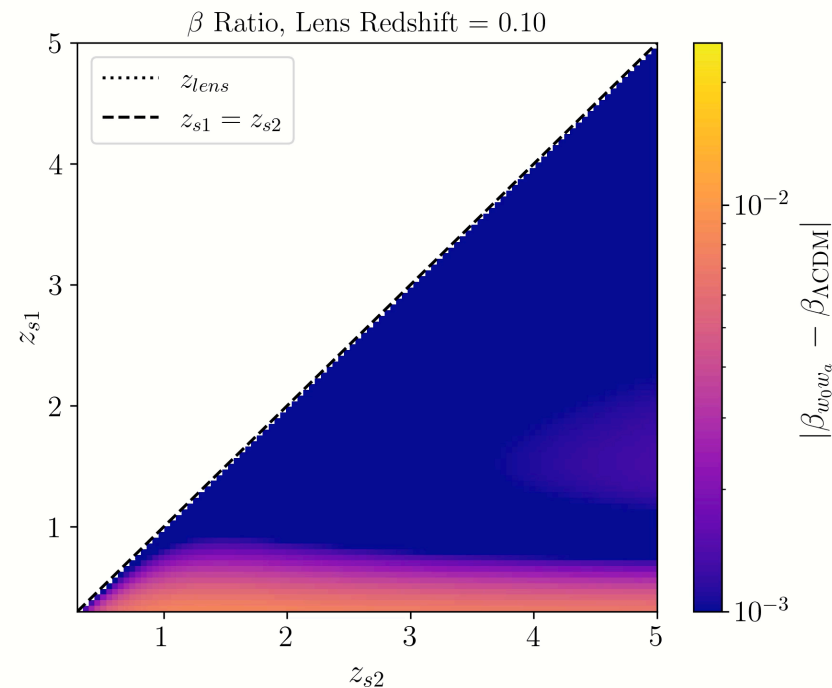


Sahu+2025, Bowden+2025

AGEL: Cosmography

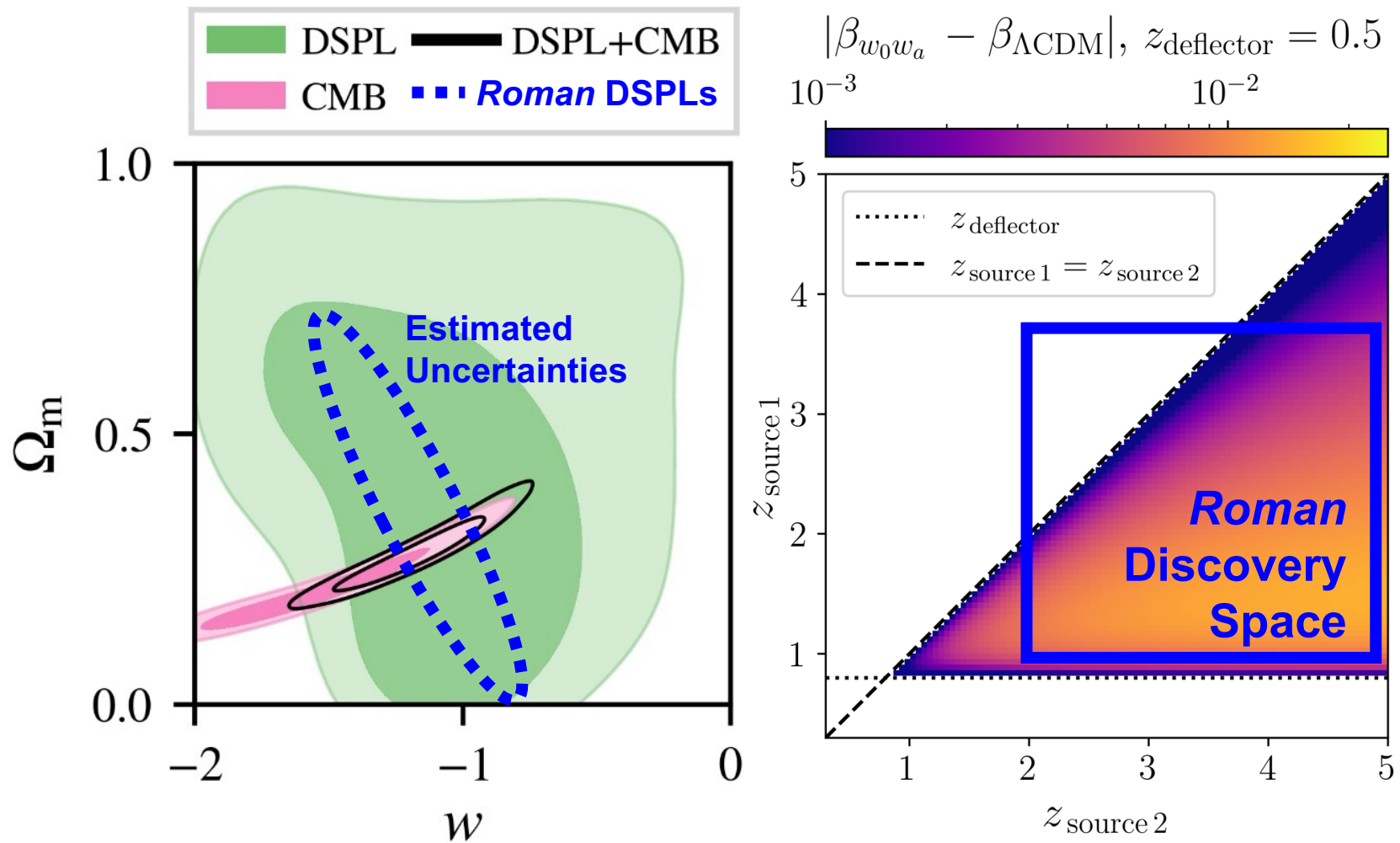


Sahu+ 2025
Bowden+2025



Cordova Rosado

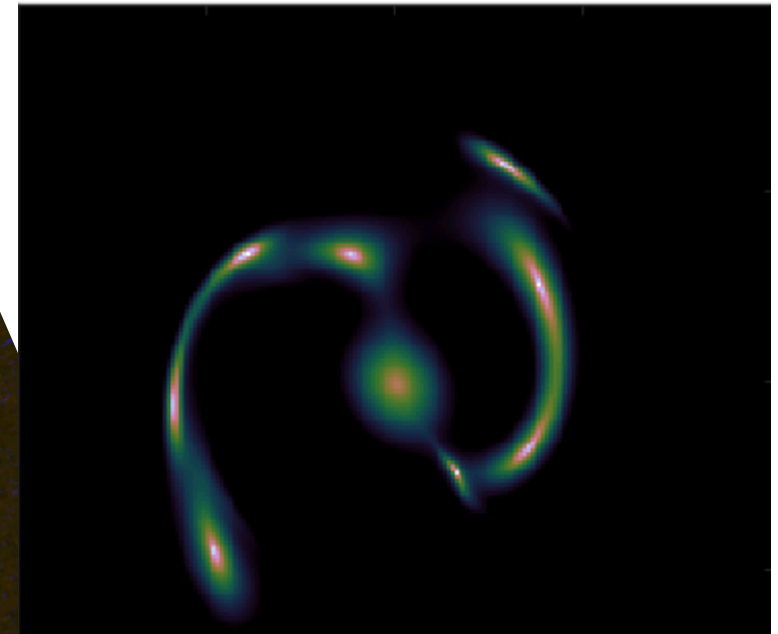
AGEL: Cosmography



Cordova Rosado

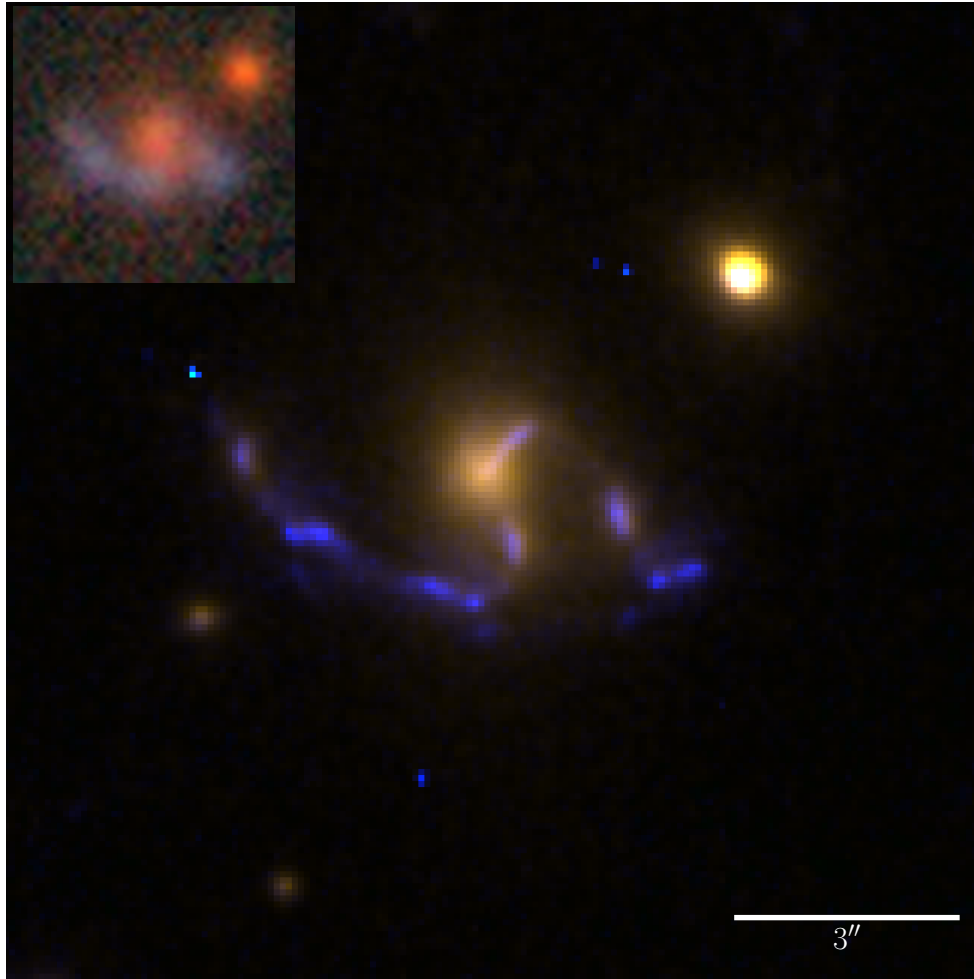
AGEL Einstein Spirals™

Spectroscopic Redshift = 2.4



Shajib+ submitted

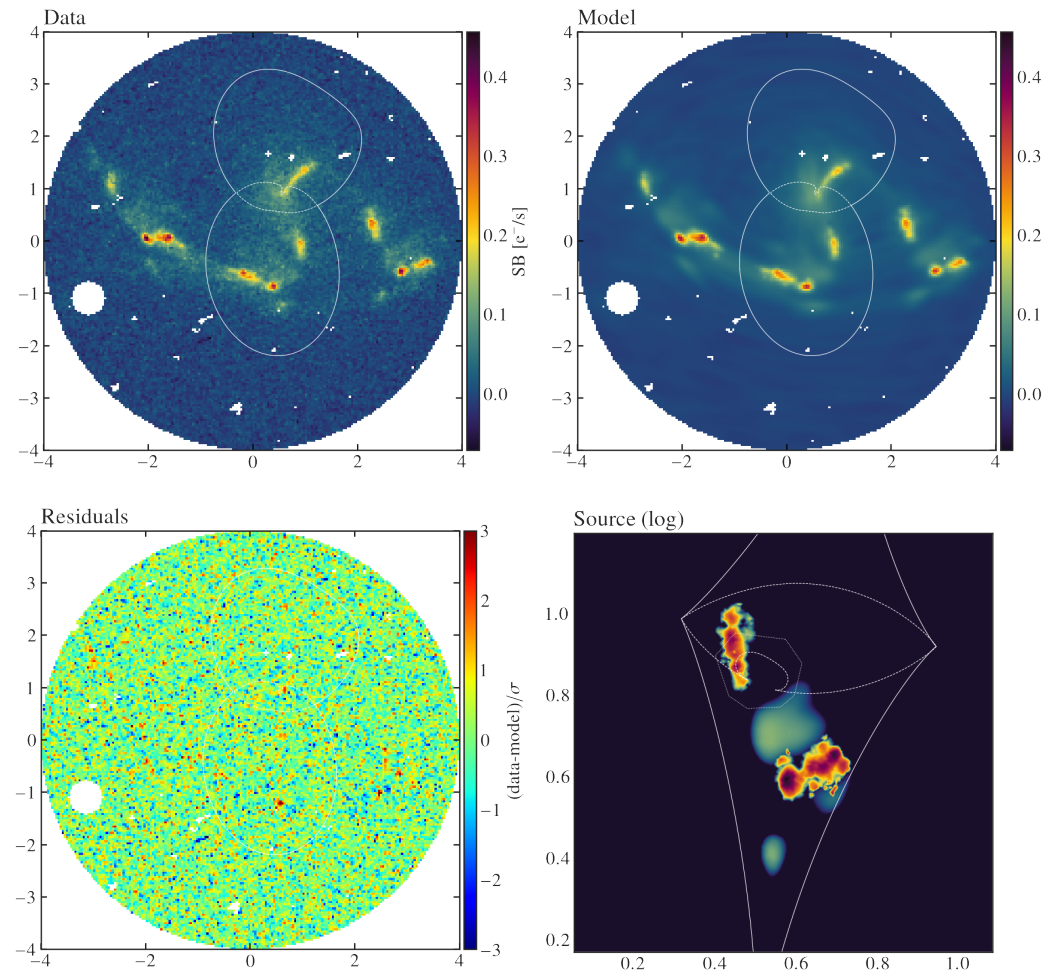
AGEL Einstein Spirals™



AGEL0206

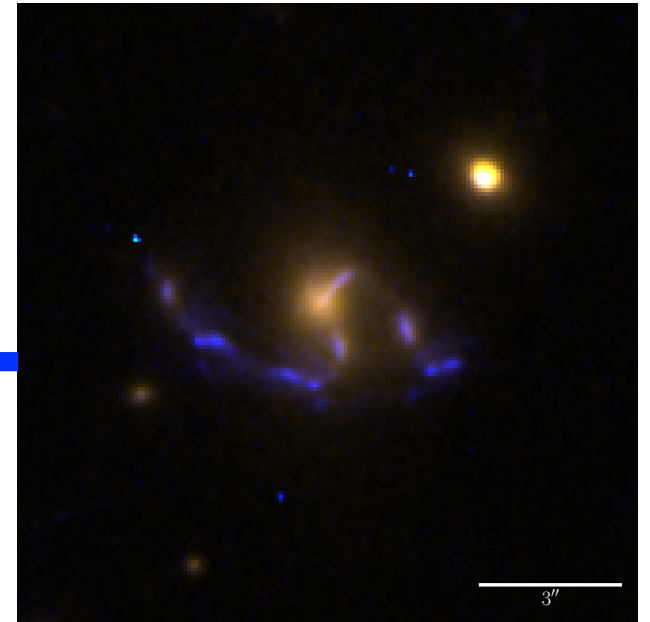
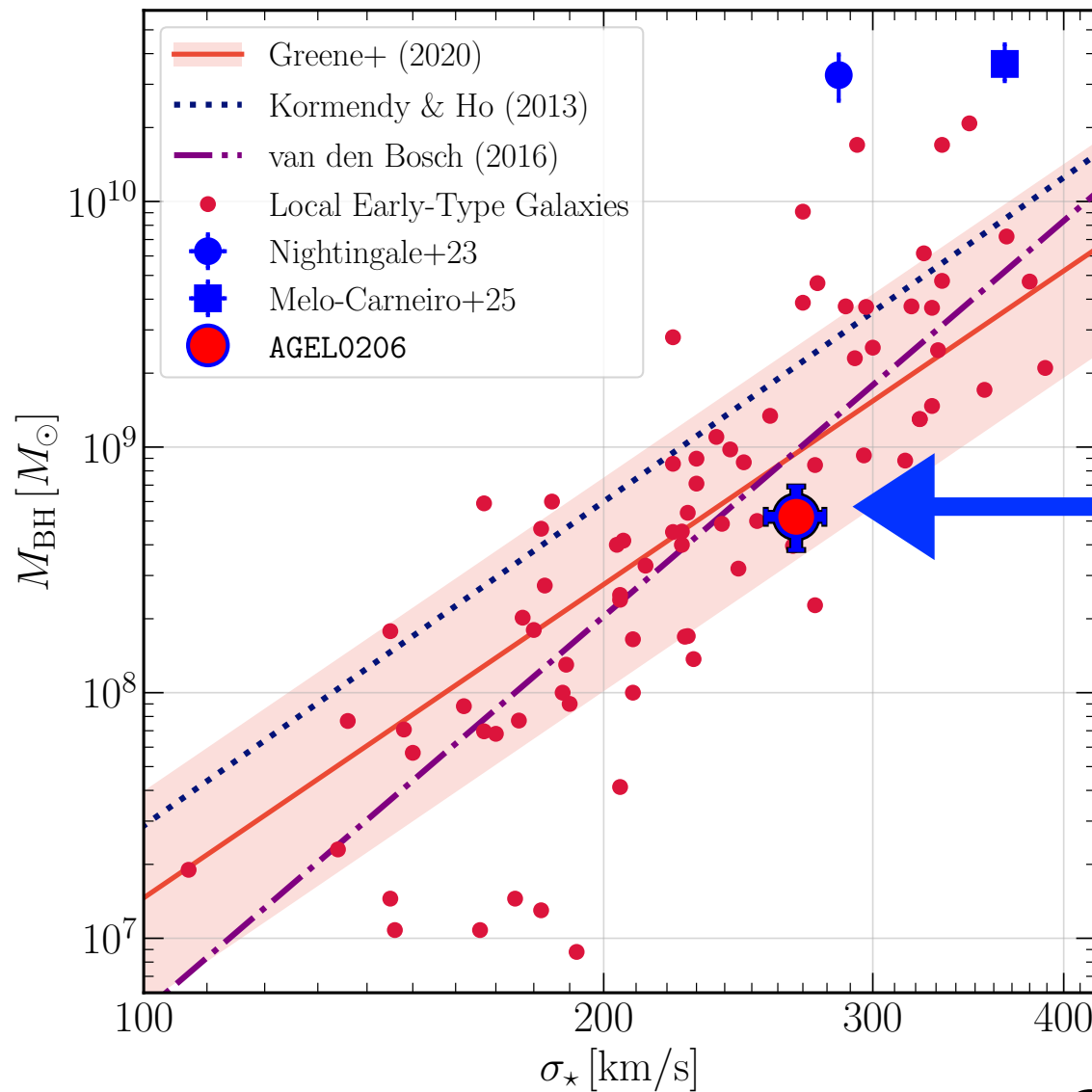
$z_{\text{defl}} = 0.675$

$z_{\text{src}} = 1.303$



Cordova Rosado, in prep

AGEL Einstein Spirals™



Cordova Rosado, in prep

AGEL Science

AGEL: ~200 Strong Gravitational Lenses

Hubble imaging and

Optical + Near-Infrared spectroscopy (IFU)

→ Roman Pathfinder for Rare Systems

Strong Lens modeling (massive bottleneck)

Machine Learning

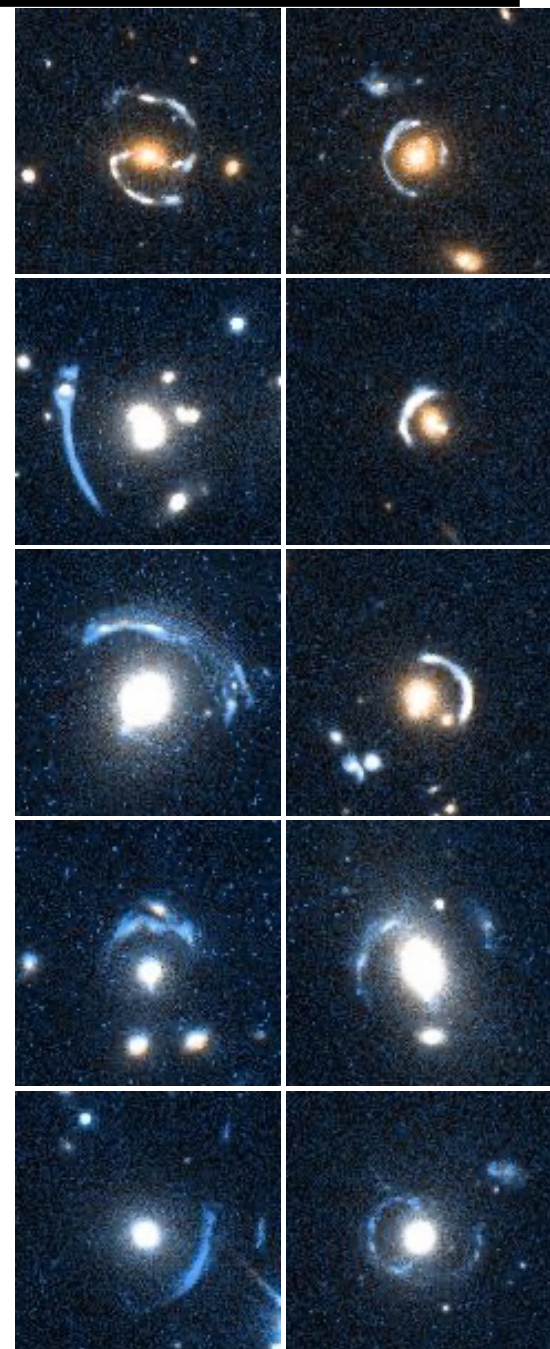
Matter substructure (Deflectors)

Lensing Luminosity Function (Environment)

→ Cosmology

→ Galaxy Evolution

→ Super-Massive Black Holes

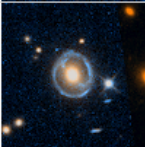


AGEL Data Products!

- HST Imaging
- Ground-based Spectroscopy
- Catalogs
- Animations
- Lens models (coming soon)
-other great stuff!

Check out the AGEL website



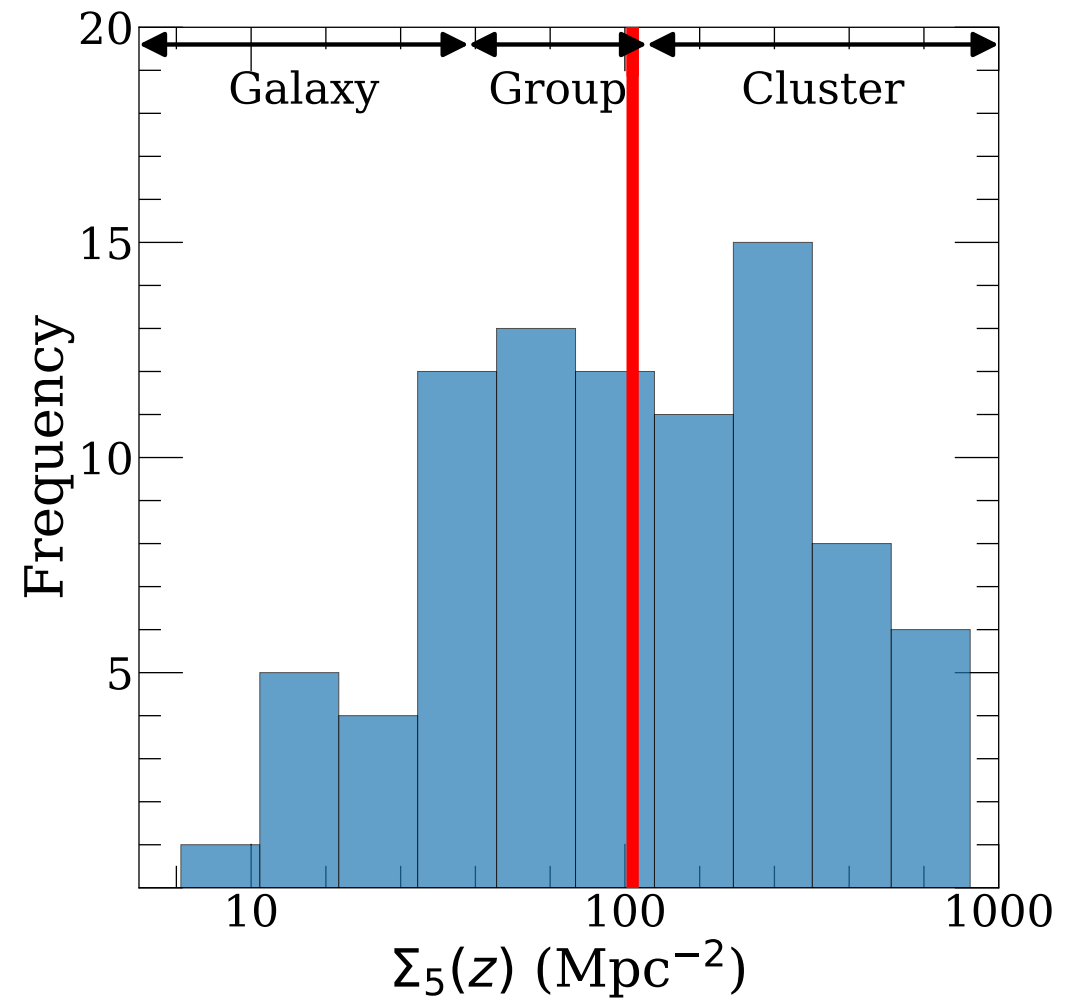
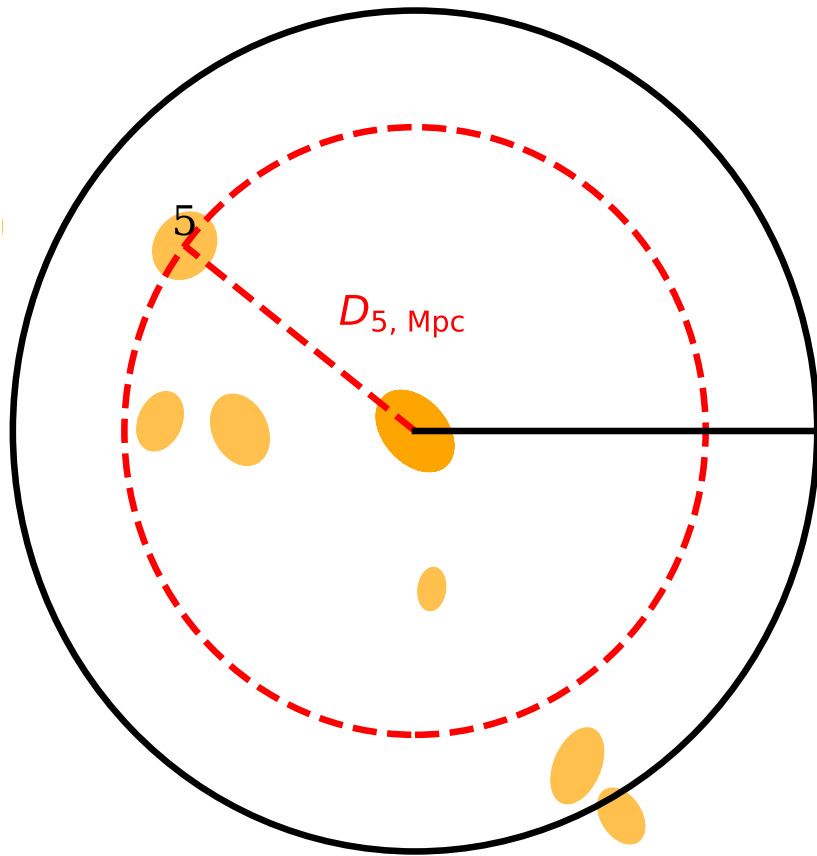
AGEL DR2						
DECaLS grz image	HST Image	Objname	HST Objname	Status	RA	Dec
		AGEL000316-334804A	DESJ0003-3348	Observed	0.81826	-33.80120
		AGEL000645-442950A	DESJ0006-4429	Observed	1.68592	-44.49735
		AGEL000729-443446A	DESJ0007-4434	Observed	1.87201	-44.57949

[Redshifts](#) [SNAP 16773 Glazebrook](#) [SNAP 15867 Huang](#) [GAP 17307 Tran](#)

A deep-field astronomical image showing a vast number of galaxies, including spiral, elliptical, and irregular shapes, scattered across a black cosmic background. Several bright stars are visible, each with prominent blue and white diffraction spikes. A network of thin blue lines crisscrosses the image, likely representing a celestial coordinate grid. The text "Thank You !" is centered in a white, sans-serif font.

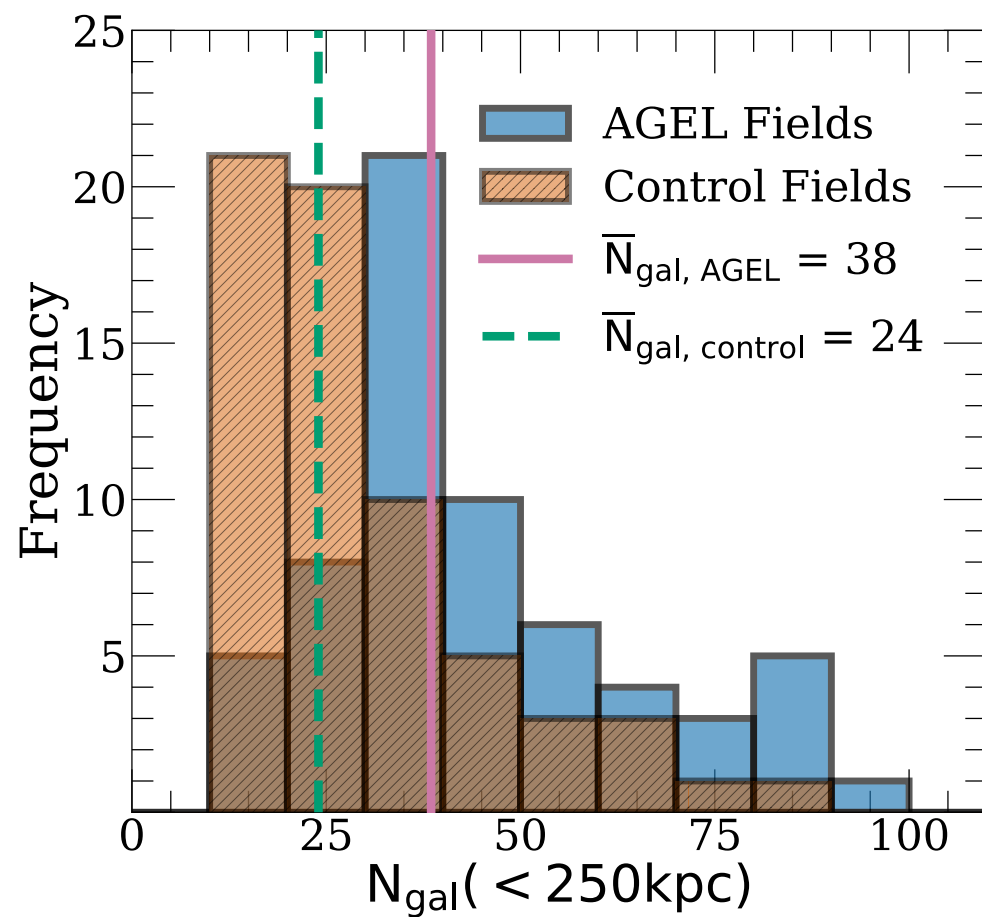
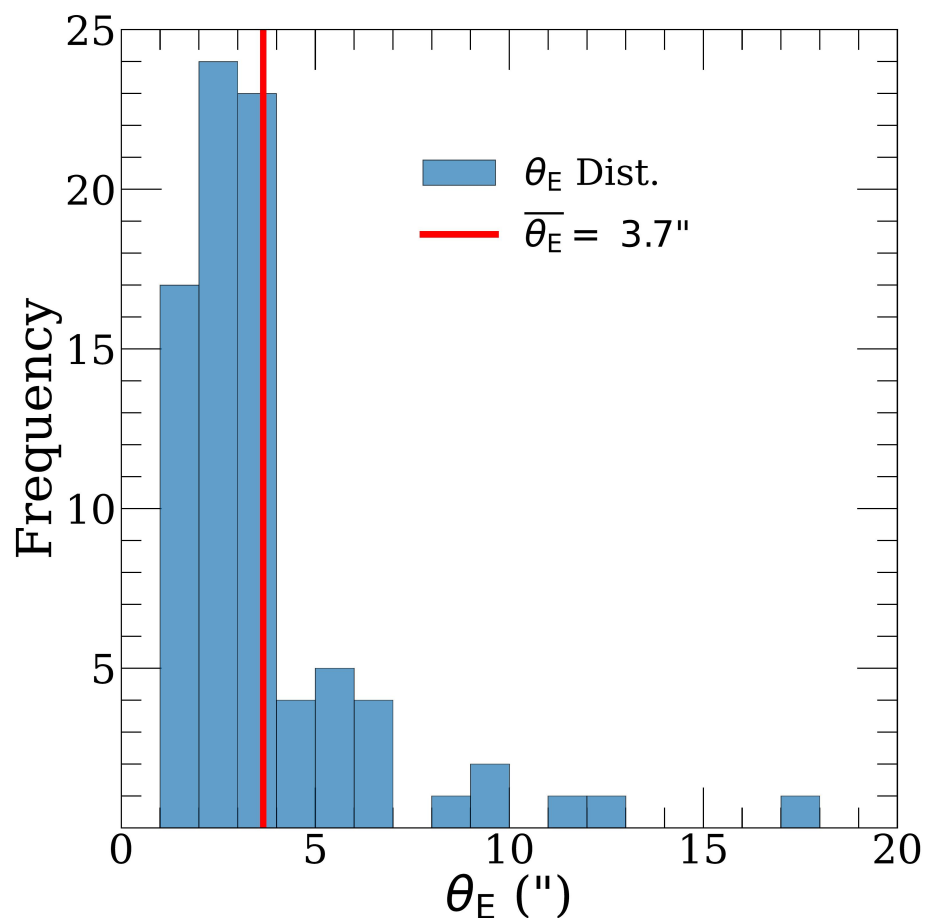
Thank You !

AGEL: Deflector

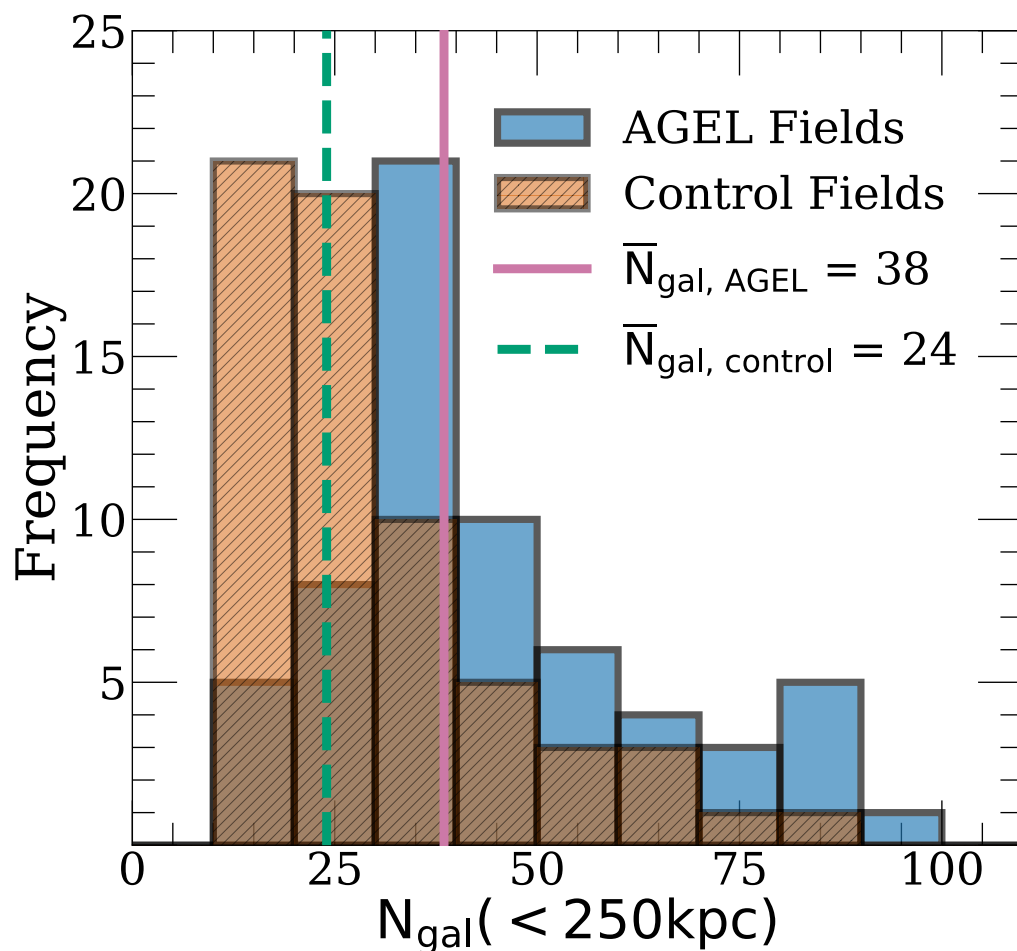


Gottmoller+2026

AGEL: Deflector



AGEL: Deflector



Strong lensing searches are (very) incomplete at small Einstein radii (masses).

Biased towards finding groups/clusters.

Roman

~100,000 strong lenses

- 1) Need multi-plexing factor (hundreds/thousands)
- 2) Wavelength coverage
- 3) Spatial resolution
- 4) Multi-wavelength community datasets