The Far-Ultraviolet Extragalactic Legacy (FUEL) Survey: Hubble Far-UV Images and Catalogs of the Extragalactic Legacy Fields

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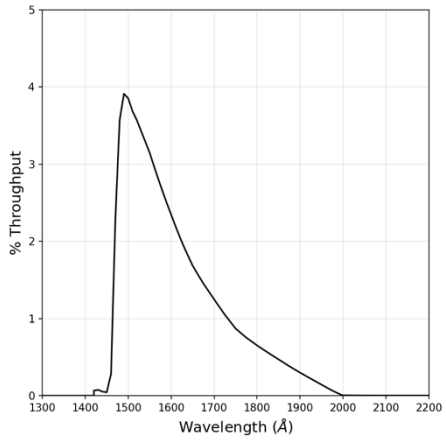
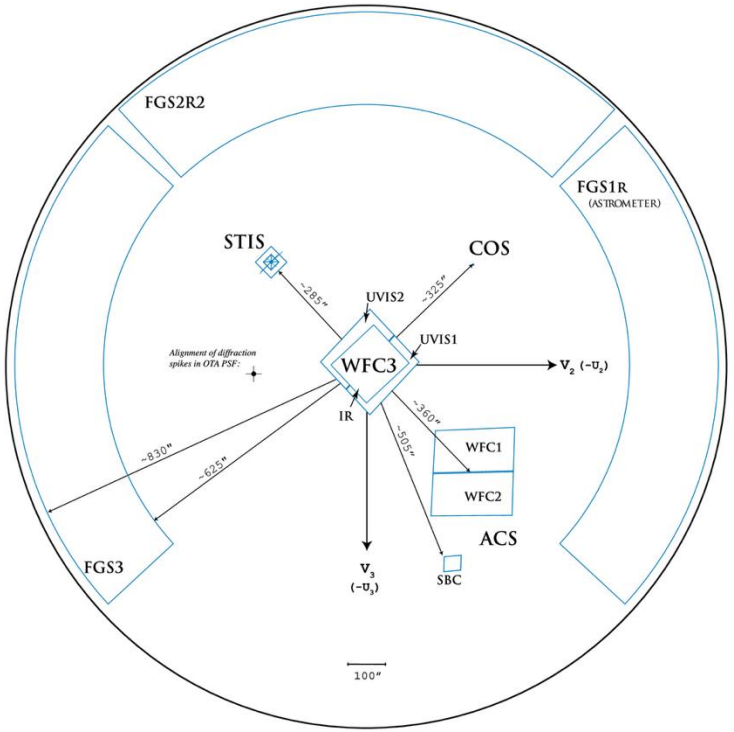
AAS 247

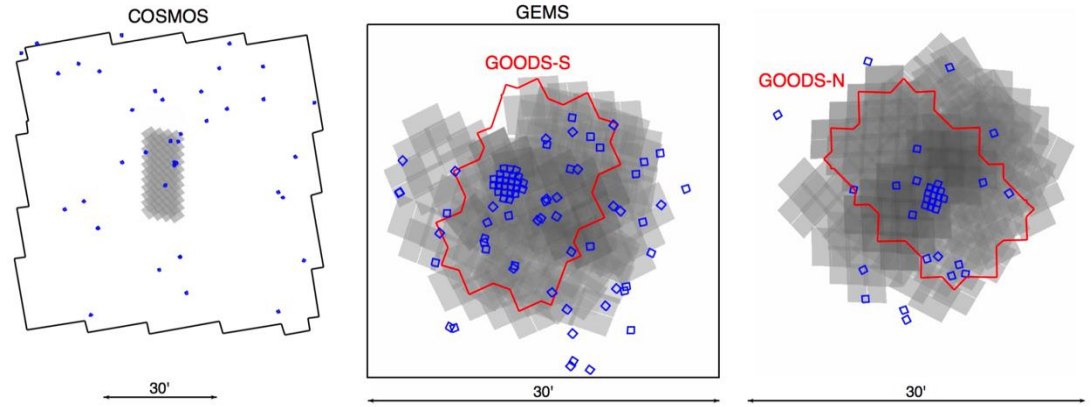
- HST/ACS-SBC F150LP, pivot ~1606 Å
- Uniform mosaics + catalogs for GOODS-S, GOODS-N, COSMOS

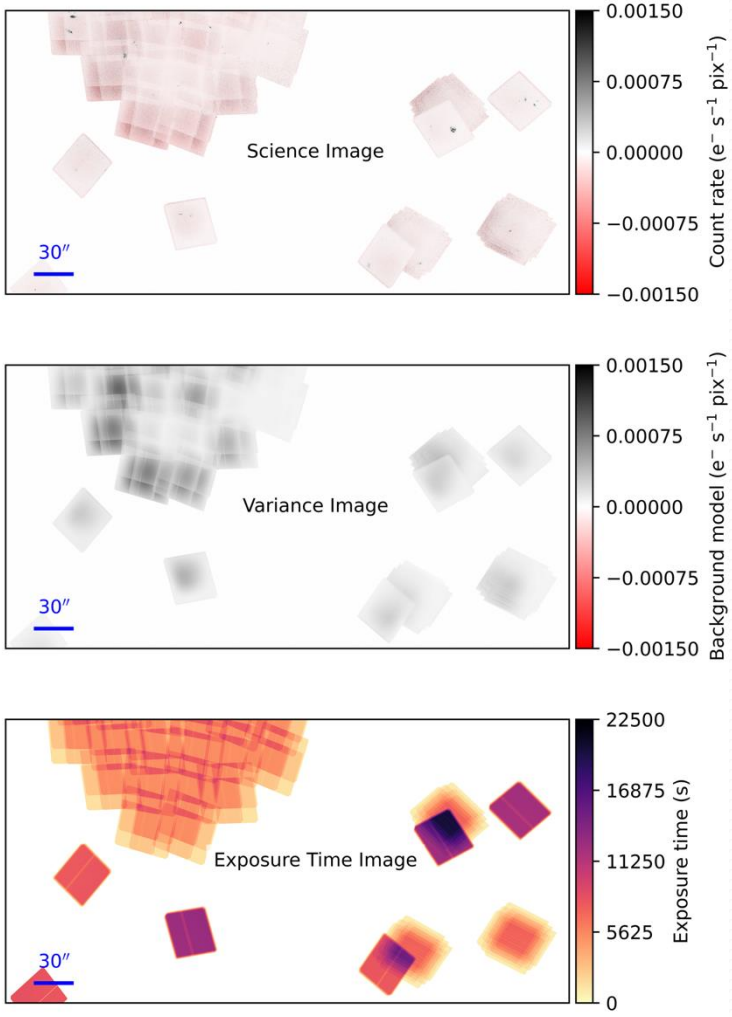




The full archival SBC/F150LP dataset in three fields

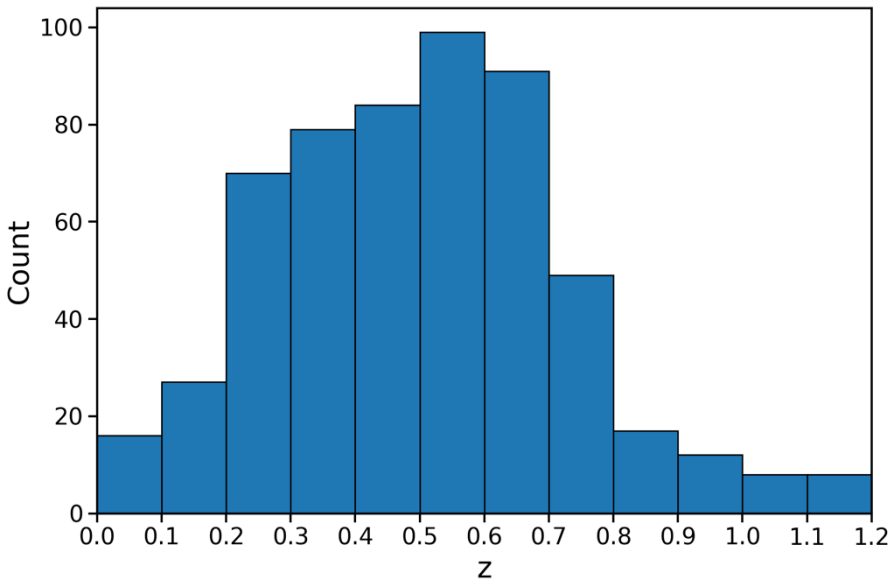
- 365 orbits, 151 pointings, total ≈ 45 arcmin²
- 3 fields: GOODS-N, GOODS-S, COSMOS
- Depth reaches :
  FUV ≈ 29.8 AB, 3σ in 0.5″ diameter apertures



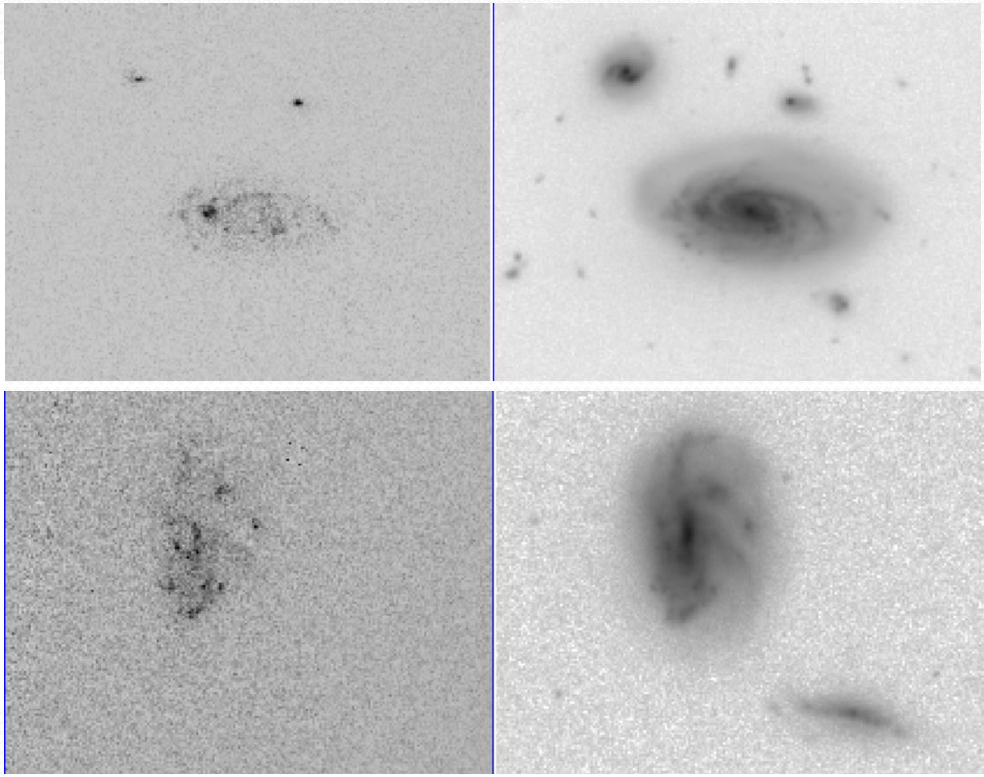


Uniform processing and public data products

- Uniform reprocessing, aligned to HST optical/IR mosaics
- Public data products: science mosaics, variance maps, time maps, & matched catalogs
- 1121 detections in the catalog

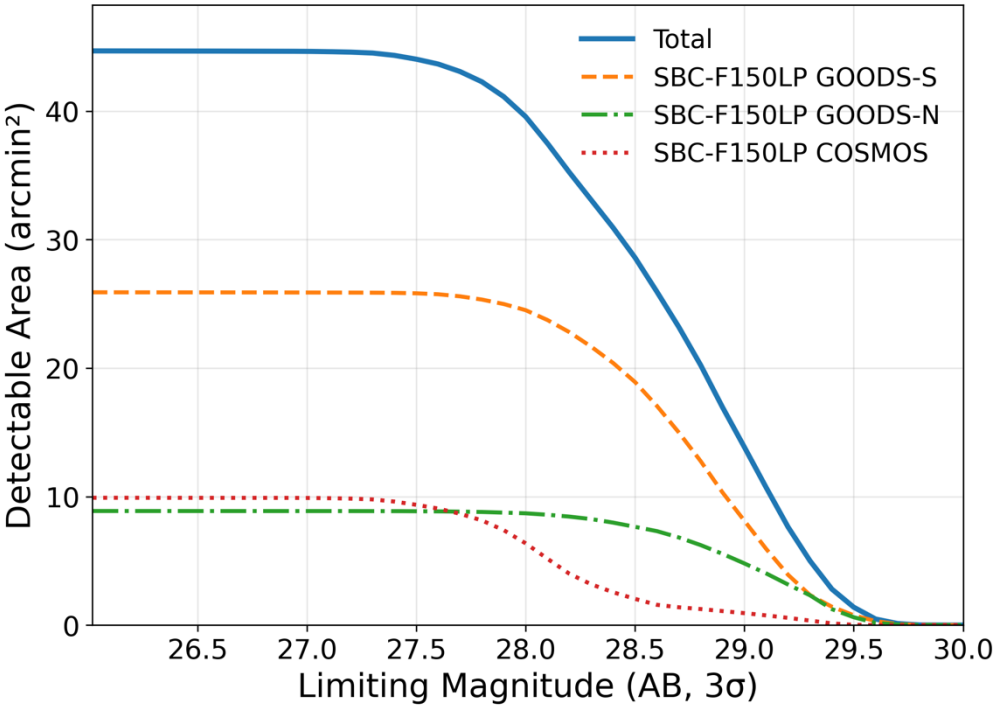


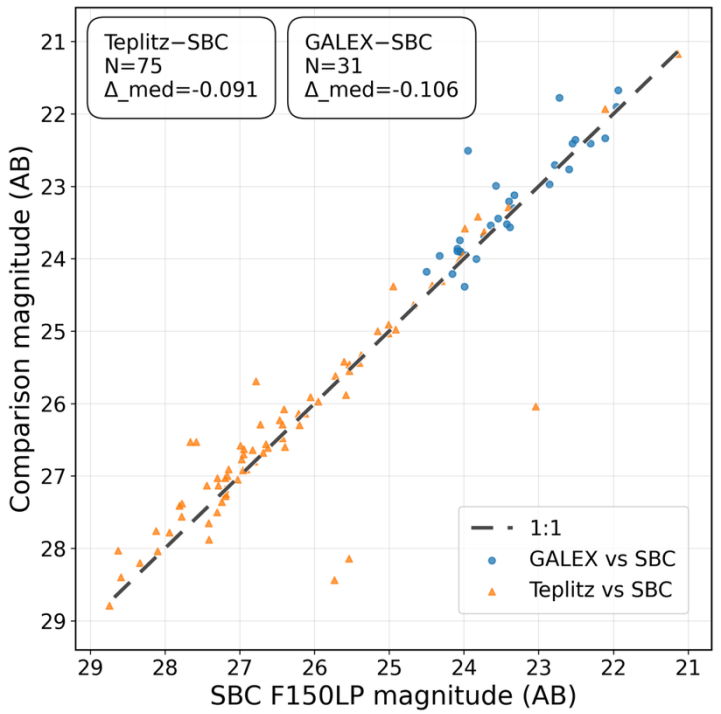
F150LP (FUV) F606W (Optical)



Depth–area and external checks

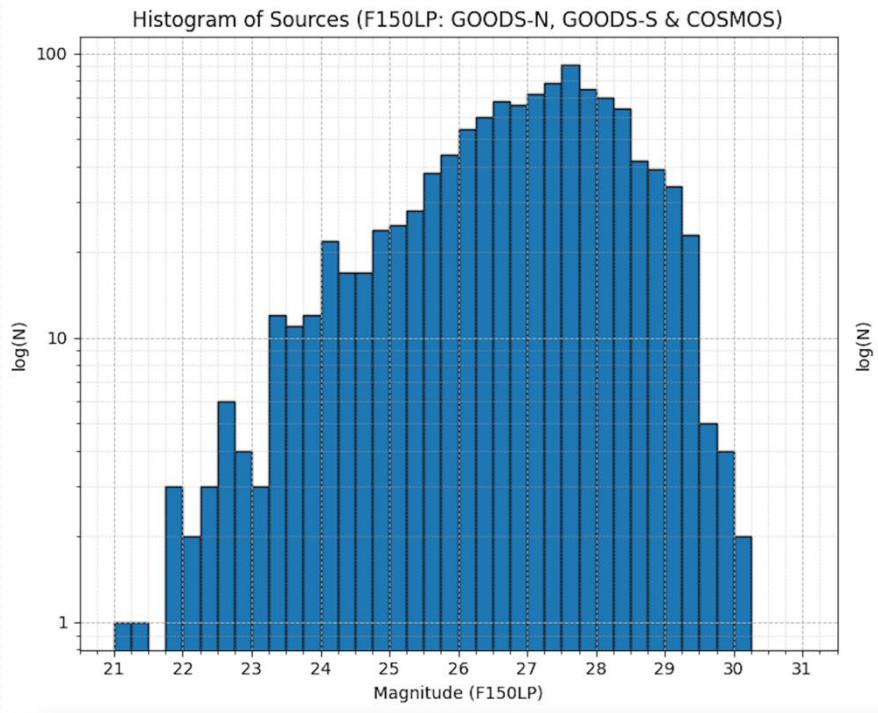
- Wide+deep FUV coverage across three fields
- Depth varies, but we quantify the effective area at each limit
- External comparisons show near 1:1 trends, small ~0.1 mag offsets

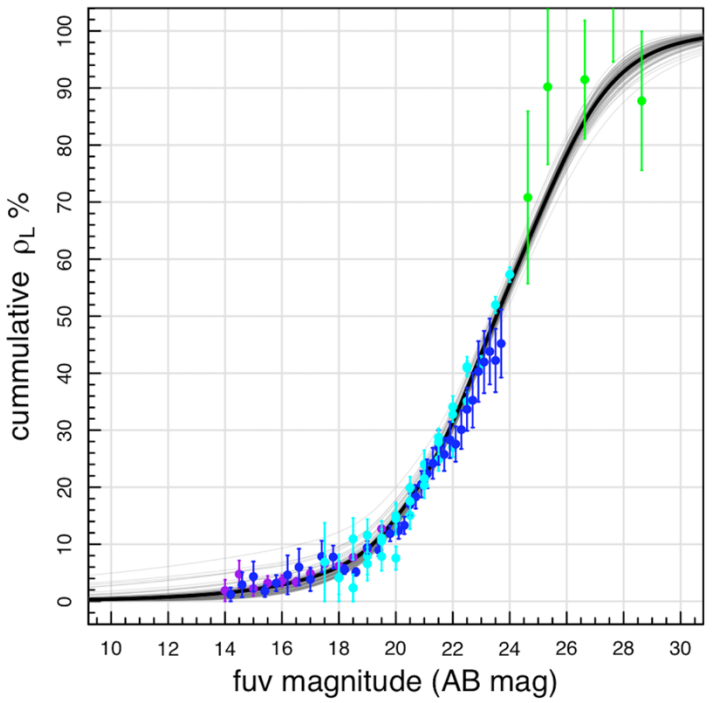




Science Goal #1: Ultraviolet Extragalactic Background Light (EBL)

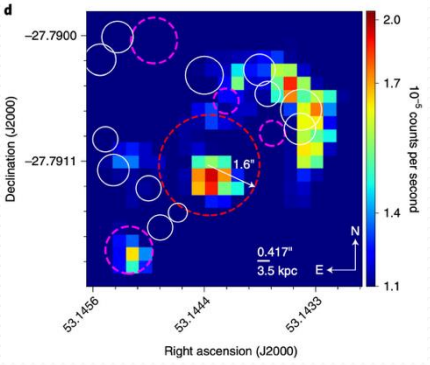
- EBL constrains galaxy evolution
- Integrated number counts give estimated EBL
- ~3x more area, new field in COSMOS → Smaller Poisson/Cosmic variance
- FUV EBL uncertainty reduced **from ~21% to ~7%**

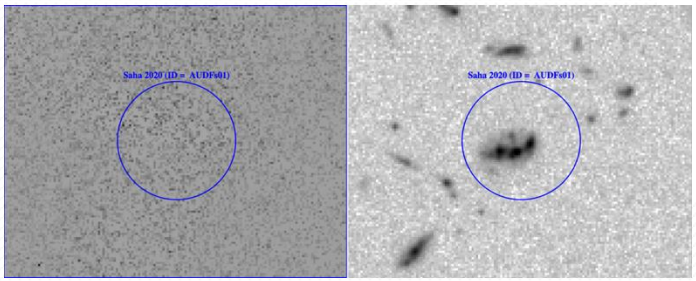


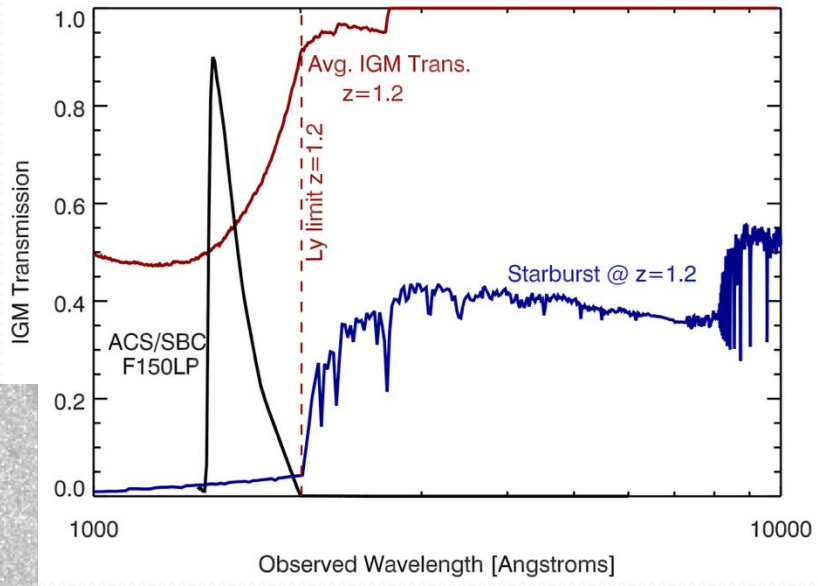


Science Goal #2: Lyman Continuum (LyC) Escape Fraction

- F150LP filter measures rest-frame LyC at z > 1.2
- ~150 galaxies with spectroscopic redshifts at 1.2<z<1.6
- Stack on galaxy property (SFR, SF surface density, [OIII]/Hb ratios
- Verify reported LyC candidates (Saha+2020, Maulick+2024, Dhiwar+2024, Maulick+2025)





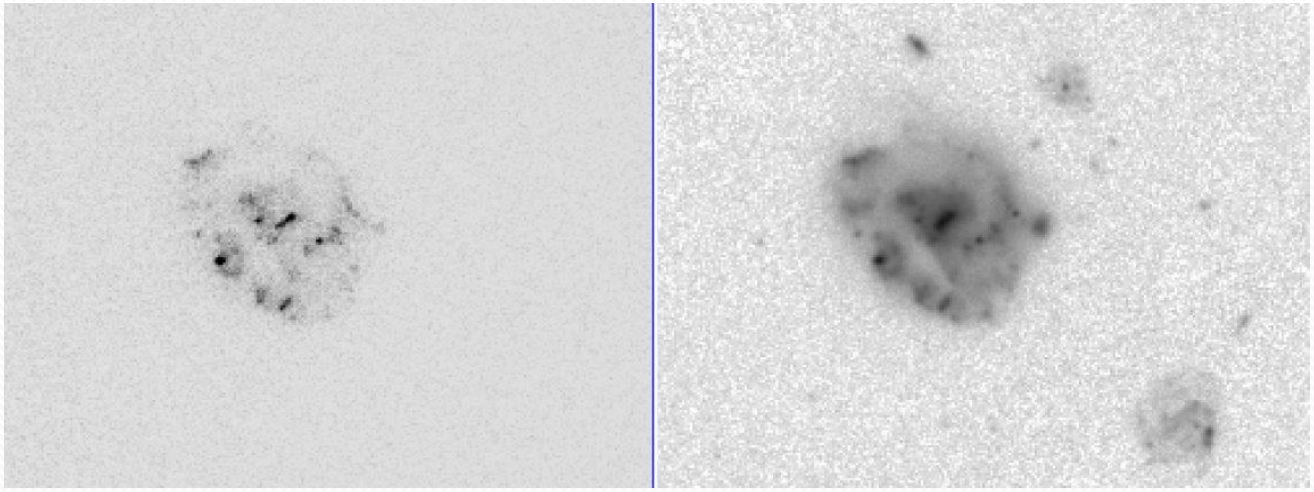


Saha et al. (2020) F150LP F606W

Public Release

- **Paper:** arXiv — **Jan 2026** *(week after AAS 247)*
- **Data products:** F150LP science mosaics + variance maps + time maps + matched catalogs
- **Data release:** MAST — **~ Feb 2026** *(after publication; ~end of February)*
- **Questions / contact:** Aliakbar Kavei — aliakbar.kavei@email.ucr.edu

Thank you — Questions?



F150LP (FUV) F606W (Optical)